PB80-221609

TSCA Chemical Assessment Series
Chemical Screening: Initial Evaluations of Substantial Risk Notices, Section 8(e) January 1, 1977-June 30, 1979. Volume 1

(U.S.) Environmental Protection Agency
Washington, DC

Mar 80

U.S. Department of Commerce
National Technical Information Service
NTIS

PB80-221609

EPA

TSCA Chemical Assessment Series

Chemical Screening: Initial Evaluations of Substantial Risk Notices, Section 8(e)

January 1, 1977 - June 30, 1979

REPRODUCED BY
NATIONAL TECHNICAL
INFORMATION SERVICE
U. S. DEPARTMENT OF COMMERCE
SPRINGFIELD, VA. 22161

NOTICE TO ADMINISTRATOR OF SUBSTANTIAL RISKS. Any person who manufactures, processes, or distributes in commerce a chemical substance or mixture and who obtains information which reasonably supports the conclusion that such substance or mixture presents a substantial risk of injury to health or the environment shall immediately inform the Administrator of such information unless such person has actual knowledge that the Administrator has been adequately informed of such information.

--Section 8(e), Toxic Substances Control Act (1976)

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(Please read Instructions on the reverse before completing)

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This collection of Status Reports (initial evaluations) was prepared by scientists in the EPA Office of Pesticides and Toxic Substances (OPTS) on submissions received between January 1, 1977 and June 30, 1979 from chemical manufacturers, processors, and distributors under Section 8(e) of the Toxic Substances Control Act (TSCA). The volume is being published for two reasons. First, the collection of status reports in a single volume will make that information more accessible to the public. Second, the volume may, by providing specific examples of submitted information and EPA's evaluation of it, help anyone subject to Section 8(e) to understand better the types of information that should be submitted to the Agency.

To date, no information submitted under Section 8(e) has resulted in immediate regulatory action under TSCA or any other act, although some submitted information has triggered further data gathering and evaluation that may lead to proposal of regulations in the future.

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March 1980

CHEMICAL SCREENING: INITIAL EVALUATIONS OF SUBSTANTIAL RISK NOTICES, SECTION 8(e) JANUARY 1, 1977, TO JUNE 30, 1979

Volume 1

Office of Testing and Evaluation
Office of Pesticides and Toxic Substances
Washington, DC 20460

U.S. ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF PESTICIDES AND TOXIC SUBSTANCES
WASHINGTON, DC 20460

1B

Disclaimer

This volume has been reviewed by the Office of Pesticides and Toxic Substances, U.S. Environmental Protection Agency, and approved for publication. The status reports published in this volume present the Agency's preliminary evaluations of the submitted information; they do not represent final Agency policy or intent with respect to the submissions or the subject chemicals. Mention of company names, trade names, or commercial products does not constitute Agency endorsement or recommendation.

Foreword

Evaluations of chemical substances prepared by scientists in EPA's Office of Testing and Evaluation, Office of Pesticides and Toxic Substances (OPTS), to implement provisions in the Toxic Substances Control Act (TSCA), will be published periodically and made available to the public in the TSCA Chemical Assessment Series. Some of the volumes in the series will be reports on single chemicals; others will be compendiums of information received and evaluated by the Agency about many chemicals. (The anticipated frequency of publication will vary among titles: some will be published annually, some semiannually, and others quarterly.)

Because the chemical assessments published in this series often will reflect initial or intermediate steps in EPA's evaluation of a chemical under TSCA, the Agency welcomes the submission of additional information for or comments on its evaluations. Such submissions will be considered either at a subsequent step in the assessment of the subject chemical or in the decision not to proceed with further evaluation.

All information for or comments on volumes in the TSCA Chemical Assessment Series should be submitted to:

Director, Assessment Division (TS-792)
Office of Pesticides and Toxic Substances
U.S. Environmental Protection Agency
401 "M" Street, S.W.
Washington, D.C. 20460

The TSCA Chemical Assessment Series is being distributed through the Industry Assistance Office (IAO) in OPTS. IAO is maintaining two mailing lists: a subscription list of persons who want to receive all volumes in the series and a notification list of persons who want to receive announcements of individual volumes as they become available. For a place on either IAO list, telephone IAO (toll-free 800-424-9065 or, in Washington, D.C., 554-1404) or write to:

Industry Assistance Office (TS-799)
U.S. Environmental Protection Agency
401 "M" Street, S.W.
Washington, D.C. 20460
Toll Free: (800-424-9065)
Washington, D.C.: (554-1404)

Generally, five thousand copies of each volume will be printed. After this supply is exhausted, copies can be purchased from the National Technical Information Service (NTIS), whose "PB" reference number can be found in the OPTS "Comprehensive List of Scientific and Technical Reports," also available from IAO.

The status reports (evaluations) prepared by OPTS on submissions received from chemical manufacturers, processors, and distributors between January 1, 1977, and June 30, 1979, under Section 8(e) of TSCA (90 Stat. 2029, 15 U.S.C. 2607), are presented in chronologic order in this volume. Status reports are prepared by OPTS on all formal submissions received under Section 8(e) and on other similar types of information received by EPA. All Section 8(e) submissions and the resulting status reports are placed in a public file (subject to claims of confidentiality made by the submitter) upon their receipt or completion.

EPA is publishing this volume for two reasons. First, the collection of status reports in a single volume will make that information more accessible to the public. Second, the volume may, by providing specific examples of submitted information and EPA's evaluation of it, help anyone subject to Section 8(e) to understand better the types of information that should be submitted to the EPA.

To date, no information submitted under Section 8(e) has resulted in immediate regulatory action under TSCA or any other act, although some submitted information has triggered further data gathering and evaluation that may lead to proposal of regulations in the future.

The original submissions, as well as all status reports, can be viewed at EPA Headquarters (Room 447 East Tower), 401 M Street, S.W., Washington, D.C.

Joseph J. Merenda
Director, Assessment Division

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Acknowledgment

In preparing the status reports contained in this volume, staff of the Office of Pesticides and Toxic Substances (OPTS) have frequently found it necessary to contact the firm submitting a notice to request further information or clarification of the submitted data. OPTS appreciates the effort and cooperation of those firms that have submitted the information evaluated in this volume:

Allied Chemical
Ameribrom, Inc.
American Petroleum Institute
Ashland Chemical Corporation
BASF Wyandotte Corporation
Biocraft Laboratories, Inc.
Celanese Corporation
Chemetron Chemical Products
Ciba-Geigy Corporation
Consolidation Coal Company
Continental Oil Co. (Conoco)
Dow Badische Company
Dow Chemical Company
E. I. Dupont de Nemours & Company
Eastman Kodak Company
Eli Lilly & Company
Emery Industries, Inc.
Ethyl Corporation
Exxon Company, USA
Exxon Corporation
Gulf Mineral Resources Co.
Hercules Incorporated
Hooker Chemicals and Plastics Corporation
ICI Americas, Inc.
International Minerals & Chemical Corporation
Kennecott Copper Corporation
Kenrich Petrochemicals, Inc.
Lonza, Inc.
M & T Chemicals, Inc.
Mallinckrodt, Inc.
Mallory & Company, Inc.
Miranol Chemical Company, Inc.
Mobay Chemical Corporation
Mobil Oil Corporation
Monsanto Company

Nipro, Inc.
Occidental Chemical Company
Olin Chemicals Group
PCR Incorporated
Petrolite Corporation
Phillips Petroleum Company
PPG Industries, Inc.
Reilly Tar & Chemical Corporation
Rhodia, Inc.
Rohm & Haas Company
Shell Oil Company
Shepherd Chemical Company
Sherwin-Williams Company
Smelter Environmental Research Association
Standard Oil Company (Indiana)
Standard Oil Company (Sohio)
Sun Petroleum Products Company
Tennessee Eastman Company
Texaco, Inc.
Thiokol Corporation
Thompson-Hayward Chemical Company
Toms River Chemical Corporation
Union Camp Corporation
Union Carbide Corporation
Uniroyal Chemical
Velsicol Chemical Corporation
Xerox Corporation
3M Company

Introduction

Section 8(e) of TSCA states that "any person who manufactures, processes, or distributes in commerce a chemical substance or mixture and who obtains information which reasonably supports the conclusion that such substance or mixture presents a substantial risk of injury to health or the environment shall immediately inform the Administrator of such information unless such person has actual knowledge that the Administrator has been adequately informed of such information." Section 8(e) was self-effectuating and required no implementing rules; therefore, manufacturers, processors, and distributors of chemicals became subject to Section 8(e) as of January 1, 1977, the effective date of TSCA. To provide further guidance to those subject to Section 8(e), on March 16, 1978, after having received comment on a proposed statement of policy published earlier in the Federal Register, EPA published a "Statement of Interpretation and Enforcement Policy; Notification of Substantial Risk" (43 FR 11110). For easy referral when using this volume, the March 16, 1978, statement has been reproduced as Appendix A.

The March 16, 1978, statement expresses the Agency policy that information subject to Section 8(e) is any information that provides "reasonable support" for the conclusion that a chemical presents a substantial risk of injury but need not necessarily conclusively indicate such risk. A determination of "substantial risk" does not include evaluation of economic or social benefits of the use of the chemical and, therefore, is not synonymous with the term "unreasonable risk" used in other sections of TSCA. Receipt of information under Section 8(e) of TSCA does not necessarily trigger immediate regulatory action; however, information submitted under Section 8(e) is given priority for evaluation in order to determine an Agency course of action. An action may, for example, be further evaluation by EPA or referral to another agency. To date, no information submitted under Section 8(e) has resulted in immediate regulatory action under TSCA, although some submitted information has triggered further data gathering and evaluation that may lead to proposal of regulations in the future.

Of the initial submissions received and evaluated by EPA as Section 8(e) information between January 1, 1977, and June 30, 1979, approximately 100 were received before the publication of the March 16, 1978, statement; thus, the submitters did not have the benefit of that guidance. Approximately 25 percent of the initial submissions received were sent to the Agency with the caveat that the submitter was uncertain of the applicability of the information to Section 8(e). Some submitters stated that their reports were sent for information purposes or under other provisions of TSCA, although EPA believes that some of those reports are appropriate for submission under Section 8(e). A number of submissions appear to have been sent out of an abundance of caution, and, considering their content, did not in

EPA's judgment warrant submission under Section 8(e). Regardless of the nature of the submissions, EPA has evaluated and prepared a status report for each one.

Figure 1 depicts the Agency's handling procedures for information received under Section 8(e). Information is first received by the OPTS Document Control Officer, who is located in the Chemical Information Division of EPA's Office of Pesticides and Toxic Substances. The Document Control Officer checks the notice for any information claimed by the submitter to be confidential and assigns a Document Control Number. The Document Control Number is used by the Agency to identify specific submissions and takes the following form: 8EHQ-0000-0000. Starting from the left, the first four symbols identify the information as a Section 8(e) submission received by EPA headquarters; the next four digits identify the month and year (e.g., -0579-) of receipt of the information; the final four digits identify the submission's chronological number. In addition to the basic sequence, characters may be added to the right end of the Document Control Number to convey a special status. The characters and their meaning follow:

C: contains confidential business information; access is limited to persons with appropriate clearance;
S: denotes the "sanitized" version of a confidential document; and
P: signals that the original document contains the names or other identification of individuals, the release of which may violate the Privacy Act (such documents are sanitized to remove the names or other identifiers).

The Document Control Officer next enters the information into the appropriate file: the nonconfidential and sanitized submissions enter the public file, while copies containing confidential business information are placed in the confidential file. A letter acknowledging receipt of the Section 8(e) submission is prepared by the Document Control Officer and sent to the submitter. In the case of submissions containing confidential data, the Document Control Officer sends a letter asking the submitter to support any confidentiality claims by providing the information requested in an attachment to the letter entitled "Support Information for Confidentiality Claims." This attachment is reproduced as Figure 2. The submitter has 15 working days from the date of receipt of this letter to provide EPA with the requested information. When the Document Control Officer receives the requested support information from the submitter, it is forwarded to the EPA Office of General Counsel for review, in accordance with Agency procedures. No information claimed by the submitter as confidential will be included in any file to which the public has access before the Agency's regulations affecting confidential business information have been complied with fully. This means that, before any claim for confidentiality is denied, fair and adequate notice will be given to any person who has made a claim of confidentiality. If a claimant disagrees with EPA'S determination on the confidentiality of a piece of information, that person will have adequate opportunity to challenge release of the information to the public.

Following receipt of the submission by the Chemical Information Division, the submitted information is evaluated in OPTS to determine its significance and to decide what action, if any, is indicated. Submissions containing confidential data can be handled only by persons with appropriate clearance. Most Section 8(e) submissions are evaluated by staff in the Chemical Hazard Identification Branch of the Assessment Division in OPTS, in consultation with appropriate scientists from that Division and/or other units of the Office of Testing and Evaluation. The procedures used in making such evaluations are described below. In the case of submissions reporting "emergency incidents of environmental contamination" (see Part V [c] of the March 16, 1978, policy statement), however, the initial evaluation is performed by staff in the Program Integration Division in OPTS, with scientific support as necessary from the Office of Testing and Evaluation.

Upon receipt of a Section 8(e) submission from the OPTS Document Control Officer, the Section 8(e) coordinator in the Chemical Hazard Identification Branch scans the information to determine the type of submission (e.g., mammalian laboratory study, fish bioaccumulation study, epidemiologic study, etc.) and its apparent significance. The coordinator next forwards a copy of the submission to an appropriate scientist in the Office of Testing and Evaluation, who performs an initial evaluation of the submission and prepares written comments on it. When the comments are returned to the coordinator, a status report evaluating the submission is prepared. The basic format of a status report is shown in Figure 3. The Chief of the Chemical Hazard Identification Branch reviews the prepared status report and resolves any questions with the Section 8(e) coordinator before signing the report. Next, the Director of the Assessment Division reviews the status report and either approves the report or asks for clarification. Following approval of the status report by the Division Director, follow-up activities on the submission are initiated. These include delivery of a copy of the status report to the Chemical Information Division for inclusion in the public file, transmittal to other EPA offices or Federal agencies, and preparation of a follow-up letter to the submitter. This letter transmits a copy of the status report and may ask for clarification of or additional information on the submission. Clarification is necessary when submissions are incomplete or when the content of the submission does not appear to "reasonably support" a conclusion of substantial risk.

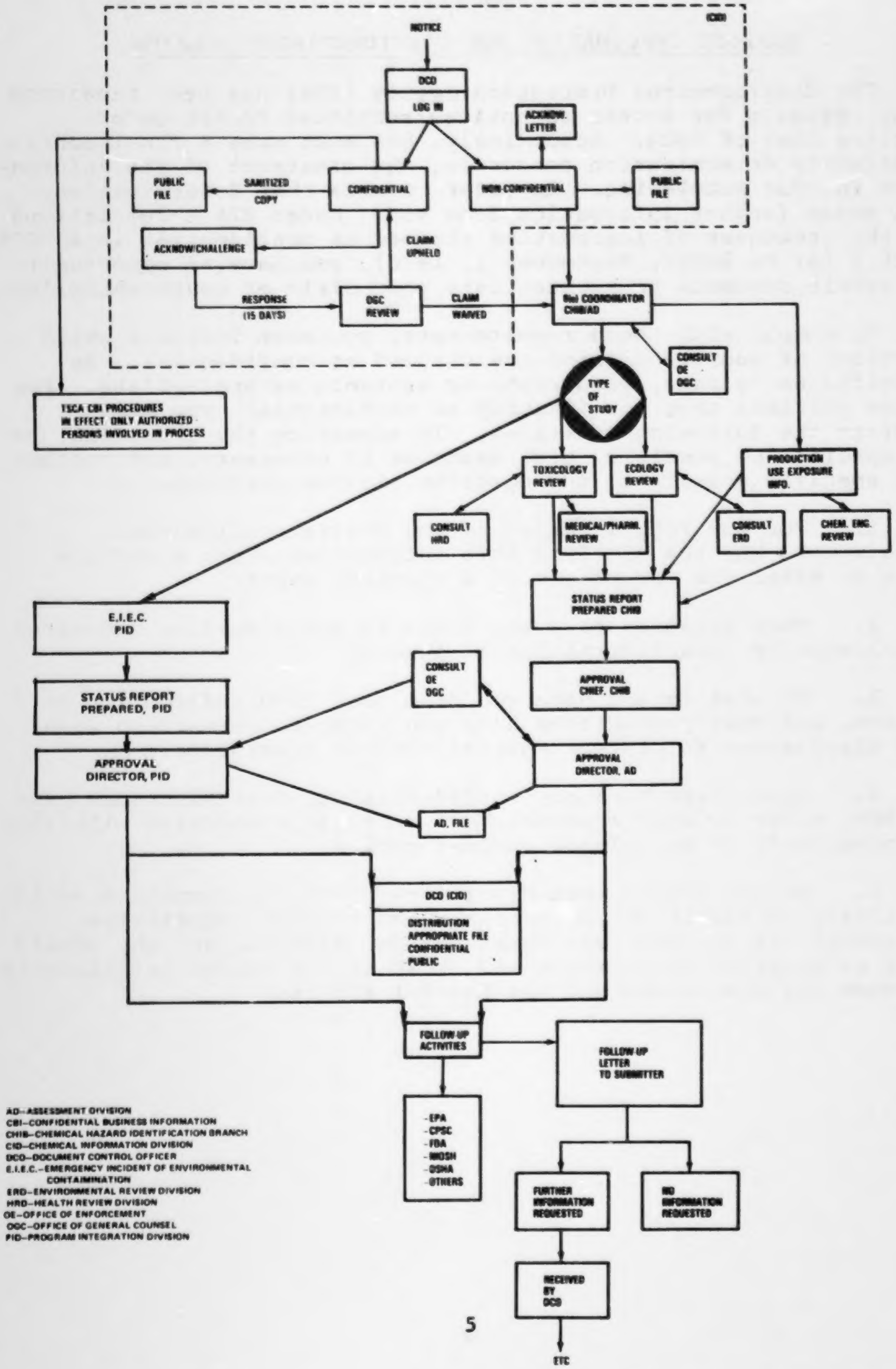
Review of notices concerning emergency incidents of environmental contamination is handled in similar fashion by the Program

Integration Division, with technical support as necessary from the Office of Testing and Evaluation. The Program Integration Division has lead responsibility for review of these items to ensure full and rapid coordination with appropriate EPA regional office personnel. The Program Integration Division has the responsibility in OPTS for coordination of headquarters and regional efforts related to toxic substances.

When reviewing a status report, the reader should remember that the purpose of EPA's evaluation is to determine the significance of the submitted information in terms of a need for possible action by the Agency. This determination involves a critical analysis of the notice to evaluate the extent to which the reported hazard is supported by the submitted information. However, the scope of the initial evaluation generally is limited to the submitted documents and to any closely related information known by the reviewer. Neither a literature search to identify other reported effects nor an in-depth analysis of possible sources of exposure to the subject chemical is part of the submission evaluation. Therefore, a status report should be viewed only as an initial review of the submitted information, not as a comprehensive assessment of the chemical for which a Section 8(e) submission has been made.

Figure 1

PROCESSING OF 8(e) NOTICES OF SUBSTANTIAL RISK


(CID)
NOTICE
DCO
LOG IN
ACKNOW. LETTER
PUBLIC FILE
SANITIZED COPY
CONFIDENTIAL
NON-CONFIDENTIAL
PUBLIC FILE
ACKNOW/CHALLENGE
CLAIM UPHELD
RESPONSE (15 DAYS)
OGC REVIEW
CLAIM WAIVED
8(e) COORDINATOR CHIB/AD
CONSULT OE OGC
TYPE OF STUDY
TSCA CBI PROCEDURES IN EFFECT. ONLY AUTHORIZED PERSONS INVOLVED IN PROCESS
TOXICOLOGY REVIEW
ECOLOGY REVIEW
PRODUCTION USE EXPOSURE INFO.
CONSULT HRD
MEDICAL/PHARM. REVIEW
CONSULT ERD
CHEM. ENG. REVIEW
STATUS REPORT PREPARED CHIB
E.I.E.C. PID
STATUS REPORT PREPARED, PID
CONSULT OE OGC
APPROVAL CHIEF, CHIB
APPROVAL DIRECTOR, PID
APPROVAL DIRECTOR, AD
AD, FILE
DCO (CID)
DISTRIBUTION APPROPRIATE FILE CONFIDENTIAL -PUBLIC
FOLLOW-UP ACTIVITIES
FOLLOW-UP LETTER TO SUBMITTER
-EPA
-CPSC
-FDA
-NIOSH
-OSHA
-OTHERS
FURTHER INFORMATION REQUESTED
NO INFORMATION REQUESTED
RECEIVED BY DCO
ETC

AD–ASSESSMENT DIVISION
CBI–CONFIDENTIAL BUSINESS INFORMATION
CHIB–CHEMICAL HAZARD IDENTIFICATION BRANCH
CID–CHEMICAL INFORMATION DIVISION
DCO–DOCUMENT CONTROL OFFICER
E.I.E.C.–EMERGENCY INCIDENT OF ENVIRONMENTAL CONTAIMINATION
ERD–ENVIRONMENTAL REVIEW DIVISION
HRD–HEALTH REVIEW DIVISION
OE–OFFICE OF ENFORCEMENT
OGC–OFFICE OF GENERAL COUNSEL
PID–PROGRAM INTEGRATION DIVISION

Figure 2

SUPPORT INFORMATION FOR CONFIDENTIALITY CLAIMS

The Environmental Protection Agency (EPA) has been receiving many requests for access to notices submitted to EPA under Section 8(e) of TSCA. Accordingly, EPA must make a final confidentiality determination concerning the treatment of the information in your submission. In order to make that determination, EPA needs further information from you. Under EPA's regulations on the treatment of information claimed as confidential in 40 CFR Part 2 (41 FR 36902, September 1, 1976), you have an opportunity to submit comments to substantiate your claim of confidentiality.

To comply with these requirements, you must indicate which portions of your submission are claimed as confidential. Be specific as to page, paragraph, or sentence as appropriate. For those portions that you identify as confidential, you must address the following questions. In answering the questions, be as specific as possible, give examples if necessary, and connect the specific answers to the specific claimed portions.

1. For how long a period do you desire confidential treatment? May EPA disclose this information after a certain date or after the occurrence of a specific event?

2. What measures have you taken to guard against undesired disclosure of this information to others?

3. To what extent have you disclosed this information to others, and what precautions have you taken in connection with the disclosures to protect against further disclosure?

4. Have there been any confidentiality determinations made by EPA, other federal agencies, or courts in connection with this information? If so, please enclose copies.

5. Do you assert that disclosure of this information would be likely to result in substantial harm to your competitive position? If so, what are those harmful effects, and why should they be regarded as substantial? What is the causal relationship between the disclosure and the harmful effects?

Figure 2 (cont.)

6. Do you assert that this information was voluntarily submitted as defined in 40 CFR 2.201(i)? If so, would the disclosure of this information tend to lessen the availability to the Government of similar information in the future? Why?

In making your claims of confidentiality and providing responses to the above questions, you should keep in mind that, under Section 14(b) of TSCA, "data from health and safety studies" are not entitled to confidential treatment, except to the extent that disclosure of such data would reveal either the portion of a mixture comprised of any of the chemical substances in the mixture or the processes used in manufacturing or processing a chemical substance or mixture. Any claim of confidentiality for data from health and safety studies that goes beyond these two types will be denied.

Figure 3

STATUS REPORT FORMAT

Submission Description

The content of the submission and the chemical(s) under discussion are identified in this section.

Submission Evaluation

Depending on the nature of the submission, either an environmental or health scientist will perform the initial evaluation. Comments generally include remarks on the experimental method, the significance of the results, points of agreement or disagreement with the conclusions offered, and any recommended actions. This section can vary in length from a brief paragraph to several paragraphs.

Current Production and Use

In this section the expected exposure to the chemical(s) is described, as estimated by production volume and use characteristics. The production volume information once taken from secondary literature is now derived from the nonconfidential TSCA Section 8(b) Chemical Inventory.

Comments/Recommendations

Additional comments that do not fit into the other sections of the status report are presented here. Such remarks include a listing of other submissions on the same chemical(s) and comments on the submission in general.

Recommendations include suggested referrals to other offices or agencies, the need for follow-up correspondence to the submitter to clarify a point, and possible EPA actions.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: August 10, 1977

SUBJECT: Status Report 8E-0777-0001

FROM: V. J. DeCarlo, Supervisor
Special Actions, OTS (WH-557)

TO: AX
AATS

Background

1. Problem Japanese chemical worker data was submitted showing that benzoyl chloride has been identified as a carcinogen.

2. Toxicological Evaluation None required.

3. Current Production and Use Benzoyl chloride is a relatively low-volume chemical. It is used as an intermediate in making dyes, pharmaceuticals, and other benzoyl compounds.

Recommendations

Based on low production volume, the highly reactive properties of benzoyl chloride, and its use as an intermediate, no further evaluation by EPA is necessary. This could be a NIOSH problem.

Future Actions

None.
(Signed copy of V. J. DeCarlo memo is in file; retyped for publication May 10, 1979.)

8EHQ-0777-0001

Responsibility for Section 8(e) of TSCA was transferred from Special Actions to the Assessment Division on February 15, 1978. The following Comments/Recommendations were contained in a memo dated March 28, 1978, from Frank D. Kover, Acting Director of the Assessment Division, to Warren R. Muir, Deputy Assistant Administrator for Testing and Evaluation, OTS.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

Comments/Recommendations

The Japanese report cited in this submission also hinted that benzyl chloride, benzal chloride, and benzotrichloride are suspected carcinogens. These chemicals will undergo CHIP scrutiny in the near future. Section 8(b) information should be checked on benzoyl chloride and these other chemicals.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: August 15, 1977

SUBJECT: Status Report 8E-0877-0002

Approved ______________

Revision Needed ______________

FROM: V. J. DeCarlo, Supervisor
Special Actions, OTS (WH-557)

TO: AX
AATS

Background

1. Problem Skin tumorigenic effects to the skin of mice when a hydrocarbon solvent is applied.

2. Toxicological Evaluation None required. Composition of the product not identified.

3. Current Production and Use The submission stated that 75,000 gallons were produced in 1976 and that it is not in current production.

Recommendations

Considering that production has been halted, no further actions are required.

Future Actions

None.
(Signed copy of V. J. DeCarlo memo is in file; retyped for publication May 10, 1979.)

8EHQ-0877-0002

Responsibility for Section 8(e) of TSCA was transferred from Special Actions to the Assessment Division on March 15, 1978.

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*NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: August 15, 1977

SUBJECT: Status Report 8E-0877-0003

FROM: V. J. DeCarlo, Supervisor
Special Actions, OTS (WH-557)

TO: AX
AATS

Background

1. Problem Increased incidence of aspermia and oligospermia in employees working within the pesticides formulation area. The company is not able to identify the specific chemical; concern is directed at dibromochloropropane (DBCP).

2. Toxicological Evaluation None required.

3. Current Production and Use It is primarily used as a pesticide. The two major producers manufacture about 25 million pounds annually.

Recommendations

Transfer all coordination responsibility to OPP on this problem since they have requested lead responsibility. Memo from Ed Johnson is attached.

Future Actions

Establish and maintain contact with OPP.
(Signed copy of V. J. DeCarlo memo is in file; retyped for publication May 10, 1979.)

8EHQ-0877-0003

Responsibility for Section 8(e) of TSCA was transferred from Special Actions to the Assessment Division on February 15, 1978.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: January 11, 1978

SUBJECT: Status Report 8E-0977-0004

FROM: V. J. DeCarlo, Supervisor
Special Actions, OTS (WH-557)

TO: Steven Jellinek, Assistant Administrator
for Toxic Substances, OTS (WH-557)

Background

1. Problem Using a standard industrial "acute" test, PCL bottoms and HEX PCL bottoms were shown to be highly toxic.
2. Toxicological Evaluation None performed; however, data submitted indicate that these materials are acutely toxic at very low levels.
3. Current Production and Use PCL and HEX PCL bottoms are waste materials. No uses have been identified.

Recommendations

Considering that these are waste materials with known toxic properties and limited human exposure, no further evaluation by EPA is necessary.

Future Actions

None.
(Signed copy of V. J. DeCarlo memo is in file; retyped for publication May 10, 1979.)

8EHQ-0977-0004

Responsibility for Section 8(e) of TSCA was transferred from Special Actions to the Assessment Division on February 15, 1978. In a letter to the submitter dated January 22, 1979, Joseph J. Merenda, Director of the Assessment Division, questioned whether the submitted information was appropriate for submission under Section 8(e) and asked the submitter to provide additional information supporting his conclusion of substantial risk.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: January 1, 1978

SUBJECT: Status Report 8E-0977-0005

FROM: V. J. DeCarlo, Supervisor
Special Actions, OTS (WH-557)

TO: Steven Jellinek, Assistant Administrator
for Toxic Substances, OTS (WH-557)

Background

1. Problem Using a standard industrial "acute" test, dibromoethyl acetate was shown to be highly toxic by dermal, oral, and inhalation routes of exposure.
2. Toxicological Evaluation None performed; however, data submitted indicate that this chemical is very acutely toxic and a strong irritant.
3. Current Production and Use Production information on this chemical was unavailable; expect the quantity produced is very small.

Recommendations

Considering the low production volume and high reactivity for this compound, no further evaluation by EPA is necessary.

Future Actions

None.
(Signed copy of V. J. DeCarlo memo is in file; retyped for publication May 10, 1979.)

8EHQ-0977-0005

Responsibility for Section 8(e) of TSCA was transferred from Special Action to the Assessment Division on February 15, 1978. The following Comments/Recommendations were contained in a memo dated March 22, 1978, from Frank D. Kover, Acting Director of the Assessment Division, to Warren R. Muir, Deputy Assistant Administrator for Testing and Evaluation,

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NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

OTS. In addition, in a letter dated January 22, 1979, Joseph J. Merenda, Director of the Assessment Division, questioned whether the submitted information was appropriate for submission under Section 8(e) and asked the submitter to provide additional information supporting his conclusion of substantial risk.

Comments/Recommendations

Apparent annual production of dibromoethyl acetate is small; this point should be confirmed when 8(b) production data become available.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: March 27, 1978

SUBJECT: Status Report 8EHQ-1077-0006

FROM: Frank D. Kover, Acting Director
Assessment Division, OTS (WH-577)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTS (TS-788)

Submission Description

Three English translations of foreign articles were supplied on the carcinogenic potential of dialkyl sulfates.

Submission Evaluation

This information is not new or surprising. Dimethyl and diethyl sulfates are carcinogenic in the rat.

Current Production and Use

Only dimethyl sulfate and diethyl sulfate are of commercial importance. Exact production figures are not available; however, the U.S. ITC reports 1975 domestic production in excess of 1,000 pounds. Current uses are as alkylating agents for phenols, amines, and thiols. Alkyl halides are acceptable substitutes in most cases.

Recommendations

Production poundage for both diethyl and dimethyl sulfate being low (1,000 pounds/annum, 1975), no further EPA action is warranted at this time. Nevertheless, once the inventory production data are available, this report should be reevaluated to confirm the [illegible]imated production figures.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: March 17, 1978 (Revised May 10, 1979)

SUBJECT: Status Report 8EHQ-1077-0007

FROM: Frank D. Kover, Supervisor
Hazard Assessment Group, OTS (WH-557)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTS (TS-788)

Submission Description

A company interoffice memo on a reproduction study of tris(2,3-debromopropyl) phosphate was submitted.

Submission Evaluation

No dominant lethal postimplantation loss was observed, although there may be effects on sperm or delayed sperm toxicity.

Part of this chemical is structurally similar to DBCP, which has been linked to low sperm count in men.

Current Production and Use

Unconfirmed reports indicate that tris is no longer being produced in the U.S.; 1975 production estimated at 7-12 million pounds. Only use is as a flame retardant for plastics.

Recommendations

In view of (1) unconfirmed reports that tris(2,3-dibromopropyl) phosphate is no longer manufactured, (2) NCI's (unpublished) conclusions that the material is a proven carcinogen and (3) CPSC's announced policy that it will prosecute suppliers of tris-treated children's sleepwear, no immediate EPA action is required. On receipt of the NCI publication concerning the positive identification of tris as a carcinogen, TSCA Section 8(a) information should be requested from known former tris manufacturers. If any tris is manufactured for other than textile uses, EPA should be notified as to amount manufactured, population exposed in the manufacture, destination and use of the product, and estimated population at risk as a result of the product's use.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: March 17, 1978 (Revised May 10, 1979)

SUBJECT: Status Report 8EHQ-1077-0008

FROM: Frank D. Kover, Supervisor
Hazard Assessment Group, OTS (WH-557)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTS (TS-788)

Submission Description

This submission contains three items of interoffice correspondence on the formation of chlorinated dibenzo-p-dioxin following an explosion in the factory.

Submission Evaluation

These dioxins have received a great deal of attention recently because of their contamination of Agent Orange, the Seveso, Italy, accident, and waste oil problems in the United States. These compounds are very persistent and very toxic.

Current Production and Use

There is no intentional commercial production (in the world) of chlorinated dibenzo-p-dioxins. They have been found as a contaminant in several pesticides, such as trichlorophenol, pentachlorophenol, 2,4,5-T, and others.

Recommendations

This submission should be brought to the attention of OSHA to consider sampling the production area for the possible occurrence of the two dioxins in the immediate vicinity of the explosion occurrence. Further, the product obtained from the process which uses the Beaumont Banvel equipment system should also be checked for the presence of both 2,7-dichlorodibenzo-p-dioxin (DCDD) and 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD).

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: March 27, 1978

SUBJECT: Status Report 8EHQ-1077-0010

Approved ______________

Revision Needed ______________

FROM: Frank D. Kover, Acting Director
Assessment Division, OTS (WH-557)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTS (TS-788)

Submission Description

Mutagenic evaluations on three commercial solvents were submitted along with several articles from the literature.

Submission Evaluation

The shortcoming of this submission is that the toxicological and mutagenesis data do not appear to have been obtained on any mixture of chemicals now existent in commerce. According to the cover letter, the three solvents were selected on a theoretical basis as representative of products manufactured and available in commerce in 1969. The submitter further states that the 1977 solvents may have a different composition. The data submitted may, therefore, not be pertinent to the products currently being produced and sold.

Current Production and Use

These solvents are apparently mixtures of hydrocarbons which are meant to approximate solvents in use several years ago. The submitter claims that the listed solvents may be similar to those in current use. The amount of information provided, however, precludes any definitive estimate of the current production of similar mixtures.

Recommendations

Petroleum-based solvents have not been addressed in any detail in OTS. The variable formulations create a complex problem. Petroleum distillates will be the topic of a conference by OPP later this year.

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: March 28, 1978

SUBJECT: Status Report 8EHQ-1077-0011

FROM: Frank D. Kover, Acting Director
Assessment Division, OTS (WH-557)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTS (TS-788)

Submission Description

An electronic vapor soldering fluid (FC-70, composition unknown) reportedly decomposes into highly toxic perfluoroisobutylene and an unidentified perfluoroimine when overheated.

Submission Evaluation

These highly toxic materials react readily with tissue proteins. No toxicity data are reported on either the starting material or the decomposition products.

Some of the most powerful antileukemia drugs are imines and can destroy cells plus being direct-acting carcinogens.

Current Production and Use

No production figures are available for FC-70, nor is it listed in the TSCA Candidate List.

Perfluoroisobutylene is contained in the TSCA Candidate List. No information is available on its uses, however.

Recommendations

No further evaluation is necessary.

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: April 7, 1978 (Revised May 10, 1979)

SUBJECT: Status Report 8EHQ-1077-0012

Approved ____________

Revision Needed ____________

FROM: Frank D. Kover, Acting Director
Assessment Division, OTS (WH-557)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTS (TS-788)

Submission Description

Results of lifetime skin-painting study of fire-resistant hydraulic fluids in mice. The hydraulic fluids contained quantities of N-nitrosomorpholine in some instances. This notice was classified at the submitter's request on April 12, 1978.

Submission Evaluation

According to the Ames group (Proc. Nat. Acad. Sci. USA, 72:5135-5139, 1975), N-nitrosomorpholine is a carcinogen and a mutagen. The mutagenic action required activation by the S-9 liver fraction. Therefore, unlike the submitter, we are not surprised that the conducting laboratory found no tumors at the site of application on the skin. The nitrosamine could be absorbed from the skin and not become carcinogenic until activated by the liver and the activated product disseminated to various target organs. The licking theory of exposure offered by the submitter is, therefore, on weak grounds. Incidentally, workers handling the product would probably not clean their hands before indulging in a snack.

Current Production and Use

"Fire-resistant hydraulic fluids" represent a fairly broad class of products. The annual production of the fluids used in this experiment is not known; however, the production volume of these fluids and similar mixtures is likely to be fairly large. The fire-resistant character of these products is probably due to the presence of water and not a fire retardant as such; these products appear to be somewhat similar in composition to synthetic cutting fluids.

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Related Past and Present Activities

These results are apparently related to those in the December 6, 1976, edition of the Wall Street Journal which reported that certain fire-resistant hydraulic fluids contained measurable quantities of nitrosamines but that the products were being reformulated to eliminate the nitrosamine problem. The submitter also commented at that time on an ongoing skin-painting study in mice to determine the carcinogenic potential of these products. Preliminary results indicated "possible carcinogenic effects." (The same article claimed that 5-7 million gallons of fire-resistant hydraulic fluids are produced annually by the entire industry.)

At that time, these results were considered in the ongoing nitrosamine-contaminated cutting fluids activity; however, the claimed reformulation was thought to have solved the nitrosamine problem. (These products apparently contain dialkylamines or dialkanolamines which can, in the presence of nitrites, form nitrosamines. Likely the reformulation consisted of the omission of nitrites from these products; this point was confirmed in the present submission.) Nevertheless, the results reported in this study indicated that the removal of nitrite from the product was not sufficient to solve the problem as evidenced by the "increase in the number of tumors above the level observed in untreated animals" following nitrite removal from the product. (Note that the submission claims that the tested formulation was similar to those currently being marketed.)

Comments/Recommendations

These results may be of great interest to NIOSH and OSHA if they have not received them. An unanswered question concerning N-nitrosomorpholine and N-nitrosodiethanolamine has been their ability to be absorbed through the skin following dermal exposure. These results appear to indicate that N-nitrosomorpholine is absorbed through the skin and can cause internal tumors following prolonged exposure. NIOSH is currently testing N-nitrosodiethanolamine via the skin route (Enviro Control is conducting the experiment) to determine its carcinogenic potential by this route. If the results reported in this submission are any indication of what will be seen in the NIOSH study, then the question of worker exposure to cutting fluids becomes of crucial concern. On the basis of this submission alone, the question of worker exposure to fire-resistant hydraulic fluids becomes an issue that demands investigation by NIOSH and OSHA.

Of even greater significance is the observation that the tested material retained its carcinogenic potential despite the removal of nitrites from the formulation. This imples that another agent in the mixture is active. There is no indication as to the identity of this other agent, but, whatever it is, it could also be a component of the compositionally similar synthetic cutting fluids. The further implications of this observation may also be of interest to NIOSH and OSHA.

This information is still confidential; however, Union Carbide received the challenge letter on either March 21 or March 22, 1978 (registered mail receipt is unclear). Therefore, the 15-day response period will be over on May 10 or May 11, 1978, depending on the recognized date of receipt. As soon as the confidentiality response period is over, and assuming that no challenge is received from the submitter, NIOSH and OSHA should be informed of these results and, if the information was not previously received by these Agencies, specific referral of the information should be made to Jane McNew of OSHA (Washington, D.C.) and Betsy Egan or Roscoe Moore of NIOSH (Cincinnati, Ohio). In addition to OSHA and NIOSH, the FDA Bureau of Drugs should be informed of these data for their consideration of the hazard associated with nitrosamines in cosmetics (Predominantly facial and hand creams and lotions).

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: May 4, 1978 (Revised May 10, 1979) Approved__________

SUBJECT: Status Report 8EHQ-1177-0013

Revision
Needed __________

FROM: Frank D. Kover, Acting Director
Assessment Division, OTS (TS-792)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTS (TS-792)

Submission Description

Results of water, sediment, and tissue residue analyses on samples taken from the Mississippi River. The analyses indicated the presence of hexachlorocyclopentadiene and related compounds. This notice was declassified on April 13, 1978.

Submission Evaluation

This report contains monitoring information on 18 HEX-related compounds, most of which are pesticides or pesticide degradation products. Water and sediment samples were taken above and below a sewer outfall (Wolf Creek outfall), which was the presumed source of the contamination. Some contamination of the sediment above the outfall was noted as represented by HEX vinyl chloride, HEX BCH, isodrin, and endrin; however, the levels found below the outfall were much higher. Little or no contamination was found in water collected above the outlet. Water collected below the outfall was contaminated with those chemicals that were found at high concentrations in the sediments taken from the same area. For the most part this included (sediment concentrations shown in parentheses): chlordene (9,372 ppb); HEX vinyl chloride (2,446 ppb); HEX BCH (1,409 ppb); isodrin (402 ppb); and endrin (568 ppb). These compounds pose a potential threat for bioaccumulation taking as a model their similarity to DDE and DDT, which are known to bioaccumulate.

Catfish (bottom feeders) caught below the same outfall showed high concentrations (2-7 ppm) of chlordene, HEX vinyl chloride, and HEX BCH in muscle tissue. Higher concentrations can be expected in the fat. Two compounds ("C" and "D") were measured in fish but not identified. Several compounds were reported in water and sediment samples (DDT, DDE, DDD, mirex, isodrin, endrin, aldrin, and dieldrin), but no fish residue data were presented. This is puzzling in light of the bioaccumulative nature of these chemicals, and particularly so because all samples were supposedly analyzed by the same group at the same time.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

Current Production and Use

All of the chemicals are pesticides or pesticide-related products, some with sizable potential for exposure.

Current Production and Use

All of the chemicals are pesticides or pesticide-related products, some with sizable potential for exposure.

Comments/Recommendations

This submission is related to 8EHQ-0278-0054 and 8EHQ-0378-0099.

(a) All three notices should be referred to the FDA Bureau of Foods, OPP, ERD, and pertinent EPA labs.

(b) A request for all information related to these submissions should go out to the notifier from the DAA.

(c) All information should be referred to OE and EPA Region IV for possible enforcement action.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: March 28, 1978 (Revised May 10, 1979)

SUBJECT: Status Report 8EHQ-1177-0014

FROM: Frank D. Kover, Acting Director
Assessment Division, OTS (WH-557)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTS (TS-788)

Submission Description

Summary of study showing triphenylphosphine in an oil solution causes nervous system disorders in dogs, cats, and rabbits when administered repeatedly in small doses orally or intramuscularly.

Submission Evaluation

Most phosphines have insufficient water solubility to be absorbed from aqueous mixtures. When administered in oil solution, however, they are absorbed from all surfaces, including intact skin. Phosphines are distributed to all lipid tissues, particularly membranes of cells in peripheral nerves and the brain. Once inside these cells, injury can result and produce the symptoms described. The previously assumed safety is based on rat studies. The rat is a poor animal model for demonstrating peripheral neuropathy and brain damage.

Current Production and Use

No production figures are available; however, the SRI Directory of Chemical Producers (1975) lists four producers, implying an annual production greater than 1,000 pounds. The submitter apparently imports triphenylphosphine and sells approximately 75,000 pounds annually. Reported uses include synthesis of organic compounds, phosphorous salts, and other phosphorous compounds.

Recommendations

Because of apparently limited U.S. production, no immediate evaluation by EPA is necessary. Once the inventory production data are available, however, this report should be reevaluated to confirm the estimated production figures. The toxicological information contained in this submission may be of interest to MCA (or others) for product safety data sheets.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: October 26, 1978

Approved ___________

SUBJECT: Status Report 8EHQ-1177-0015C
(Supplement A - Nonconfidential)

Revision
Needed ___________

FROM: Frank D. Kover
Assessment Division, OTE/OTS

TO: Joseph J. Merenda, Director
Assessment Division, OTE/OTS

Submission Description

Information supplemental to that provided with a letter dated November 4, 1977, concerning the potential neurotoxicity of triphenylphosphine. The present submission reports the results of additional toxicity studies conducted on triphenylphosphine and triphenylphosphine oxide in chickens. The study concluded that triphenylphosphine under the conditions of the study "was not found to produce permanent locomotor impairment" in chickens. Triphenylphosphine oxide was found to be more toxic than triphenylphosphine; however, the locomotor impairment noted in chickens at the highest dose of triphenylphosphine oxide was attributed to an overall toxic response rather than a specific neurotoxic response.

Submission Evaluation

Recent publications, particularly from the Neurology Department of Albert Einstein Medical School under the direction of Dr. Schaumberg, have stressed the unreliability of using white Leghorn hens as an adequately sensitive species for detecting peripheral neuropathy. Other evidence strongly suggests that peripheral neuropathy is accompanied by changes in the brain. The examination at necropsy did not include microscopic sections of nerve and brain to determine whether nerve sheaths or nerve cells were affected.

A more sensitive species, such as the cat, would have to be used to establish that triphenylphosphine or triphenylphosphine oxide has no neurotoxic effects.

Current Production and Use

Triphenylphosphine is used in the synthesis of organic compounds, phosphonium salts, and other phosphorus compounds. Annual consumption of triphenylphosphine is estimated at greater than 1,000 pounds per year.

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No information was located on triphenylphosphine oxide; however, the submission identifies the material as "a by-product of some applications." This should be clarified.

Comments/Recommendations

Several other submissions have concerned this compound (8EHQ-1177-0014; 8EHQ-1177-0015C; 8EHQ-0278-0055).

(a) This submission and status report should be transmitted to NIOSH and OSHA to supplement the information received earlier on triphenylphosphine.

(b) The submitter should be asked to describe further the use or occurrence of triphenylphosphine oxide.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: January 11, 1978

SUBJECT: Status Report 8E-1177-0016

FROM: V. J. DeCarlo, Supervisor
Special Actions, OTS (WH-557)

TO: Steven Jellinek, Assistant Administrator
for Toxic Substances, OTS (WH-557)

Background

1. Problem A retrospective mortality study on 864 males exposed to epichlorohydrin (ECH) suggests a carcinogenic risk to man.

2. Toxicological Evaluation The study submitted is considered preliminary and suggestive. The types of cancer reported are lung, colon, pancreas, and of the hematopoietic system. This first study did not consider cigarette or alcohol usage.

3. Current Production and Use Epichlorohydrin is produced by two companies at three locations. Production capacity is approximately 450 million pounds per year. Unrefined ECH is used to produce synthetic glycerin and the refined material to produce epoxide resins and elastomers.

Recommendations

This chemical is currently under evaluation by the Hazard Assessment Group. Periodic reports will be submitted.

Future Actions

Outside of the current Hazard Assessment effort, no new actions are required.
(Signed copy of V. J. DeCarlo memo is in file; retyped for publication May 10, 1979.)

8EHQ-1177-0016

Responsibility for Section 8(e) of TSCA was transferred from Special Actions to the Assessment Division on February 15, 1978.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: January 11, 1978

SUBJECT: Status Report 8E-1177-0017

FROM: V. J. DeCarlo, Supervisor
Special Actions, OTS (WH-557)

TO: Steven Jellinek, Assistant Administrator
for Toxic Substances, OTS (WH-557)

Background

1. Problem This submission was limited to one piece of interoffice correspondence on an employee with allergy problems. The employee had worked with several chemicals, but the correspondents believe that the material causing the reaction is dicyclopentadiene (DCPD) acrylate vapors.

2. Toxicological Evaluation Any of the chemicals listed could be responsible for the allergies identified.

3. Current Production and Use The submittal listed seven chemicals which are all related to pesticide manufacturing.

Recommendations

Based on the limited exposure and effects identified, no further evaluation by EPA is necessary.

Future Actions

None.
(Signed copy of V. J. DeCarlo memo is in file; retyped for publication May 10, 1979.)

8EHQ-1177-0017

Responsibility for Section 8(e) of TSCA was transferred from Special Actions to the Assessment Division on February 15, 1978. The following Comments/Recommendations were contained in a memo dated March 28, 1978, from Frank D. Kover, Acting Director of the Assessment Division, to

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NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

Warren R. Muir, Deputy Assistant Administrator for Testing and Evaluation, OTS. In addition, in a letter dated January 22, 1979, Joseph J. Merenda, Director of the Assessment Division, questioned whether the submitted information was appropriate for submission under Section 8(e) and asked the submitter to provide additional information supporting his conclusion of substantial risk.

Comments/Recommendations

A follow-up letter should be sent to the submitter requesting additional information on this incident. This notice plus any follow-up information should be referred to NIOSH and OSHA. Several dicyclopentadiene- and dicyclopentadiene derivative-related submissions have been received; this group of chemicals may be a candidate for 8(b) and/or CHIP presentation (preliminary assessment on dicyclopentadiene is scheduled for the near future).

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: January 16, 1978

SUBJECT: Status Report 8E-1177-0018

FROM: V. J. DeCarlo, Supervisor
Special Actions, OTS (WH-557)

TO: Steven Jellinek, Assistant Administrator
for Toxic Substances, OTS (WH-557)

Background

1. Problem This submission was limited to one piece of interoffice correspondence on an employee who became allergic when exposed to benzoic acid.

2. Toxicological Evaluation This allergic reaction is not surprising, since it has been reported in the literature for years.

3. Current Production and Use Benzoic acid is produced by five companies at six locations. It is used as a food preservative, in drugs, and finds widespread usage in the drug and chemical manufacturing industries.

Recommendations

Based on the limited health effects identified, no further evaluation by EPA is necessary.

Future Actions

None.
(Signed copy of V. J. DeCarlo memo is in file; retyped for publication May 10, 1979.)

8EHQ-1177-0018

Responsibility for Section 8(e) of TSCA was transferred from Special Actions to the Assessment Division on February 15, 1978. The following Comments/Recommendations were contained in a memo dated March 28, 1978, from Frank D. Kover, Acting Director of the Assessment Division, to

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

Warren R. Muir, Deputy Assistant Administrator for Testing and Evaluation, OTS. In addition, in a letter dated January 22, 1979, Joseph J. Merenda, Director of the Assessment Division, questioned whether the submitted information was appropriate for submission under Section 8(e) and asked the submitter to provide additional information supporting his conclusion of substantial risk.

Comments/Recommendations

Additional information should be requested from the submitter regarding this individual's health problems. The company doctor's report and the allergist's evaluation (if seen) should be specifically requested. This notice and any subsequent information will be referred to NIOSH and OSHA for appropriate follow-up.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: January 12, 1978

SUBJECT: Status Report 8E-1177-0019

FROM: V. J. DeCarlo, Supervisor
Special Actions, OTS (WH-557)

TO: Steven Jellinek, Assistant Administrator
for Toxic Substances, OTS (WH-557)

Background

1. Problem Preliminary data from a 2-year rat inhalation study indicate that vinyl bromide produces the same type of pathological lesions as vinyl chloride.

2. Toxicological Evaluation The results to date are not surprising. A limited evaluation was performed. The study in progress seems to be excellent.

3. Current Production and Use Vinyl bromide is produced in small quantities by five companies, with the largest producer reporting production under 1.5 million pounds per year. It is used as a flame retardant in acrylic, polyvinyl acetate, and polyvinyl chloride materials.

Recommendations

The final report will be available in 12 months. Considering the low level of production, no further analysis is warranted until the final report is received.

Future Actions

None at the present time.
(Signed copy of V. J. DeCarlo memo is in file; retyped for publication May 10, 1979.)

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

8EHQ-1177-0019

Responsibility for Section 8(e) of TSCA was transferred from Special Actions to the Assessment Division on February 15, 1978. The following Comments/Recommendations were contained in a memo dated March 28, 1978, from Frank D. Kover, Acting Director of the Assessment Division, to Warren R. Muir, Deputy Assistant Administrator for Testing and Evaluation, OTS.

Comments/Recommendations

A CHIP report on vinyl bromide is available from the Assessment Division. It is unfortunate that these results were not forwarded on a more timely basis to the old Hazard Assessment Group for CHIP consideration; as it was, HAG did not receive a copy until January 1978, over 2 months after Special Actions received the report. AD is presently considering testing vinyl bromide-based flame-resistant fabrics for residual vinyl bromide monomer content.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: March 17, 1978

SUBJECT: Status Report 8EHQ-1277-0021

FROM: Frank D. Kover, Supervisor
Hazard Assessment Group, OTS (WH-557)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTS (TS-788)

Submission Description

It is reported that employees at a mercuric oxide production facility associated with battery manufacture have exhibited a variety of symptoms: nervous system disorders, low sperm counts, and loss of weight.

Submission Evaluation

The toxicity of low-level exposure to mercury compounds has been known since the 16th century. Mercury toxicity can involve the peripheral nervous system, the central nervous system, the digestive system, as well as the liver and the kidneys.

This is the first known report on low sperm count associated with exposure to mercury compounds.

Also, they reported that the employees may be exposed to manganese, which may have augmented the reported clinical picture.

Current Production and Use

Mercuric oxide (HgO) is available in two forms--red and yellow crystals. Although no production figures are available, each form has six producers, which implies a production level greater than 1,000 pounds. In all likelihood, the actual annual production is somewhat larger than 1,000 pounds. Uses for both forms include: paint pigment, perfumery and cosmetics; pharmaceuticals; batteries; antifouling paints; fungicides; etc. Batteries are reportedly the major use of mercuric oxide. Mercuric oxide **pesticide registrations were canceled in 1975.**

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Recommendations

This submission should be brought to the attention of OSHA. The submitter has already requested a NIOSH hazard evaluation. The Hazard Assessment Group has mercury on its list of future activities.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: March 28, 1978 (Revised May 10, 1979)

SUBJECT: Status Report 8EHQ-1277-0022

FROM: Frank D. Kover, Acting Director
Hazard Assessment Group, OTS (WH-557)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTS (TS-788)

Submission Description

Study describing *in vitro* malignant transformation in BALB/3T3 cells treated with MC-984 [bis(1,3-dichloro-2-propyl)-3-chloro-2,2-dibromomethyl-1-propyl phosphate].

Submission Evaluation

MC-984 is capable of malignant transformation *in vitro*; therefore, it is suspected of being a potential carcinogen. Its phosphate ester structure could produce delayed neurotoxicity, and the BrCl content raises questions of potential liver toxicity.

If industry continues to utilize these types of phosphate esters, they will ultimately have to determine where in a given series the potential for delayed neurotoxicity becomes significant.

Current Production and Use

No production and use information was located; not on the TSCA Candidate List.

Recommendations

Apparent low production does not support continued EPA activity. Nonetheless, a number of submissions have been received on this chemical; therefore, it may be a candidate for Section 8(a), CHIP, or NIOSH/OSHA consideration.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: March 17, 1978

SUBJECT: Status Report 8EHQ-1277-0023

Approved ____________

Revision Needed ____________

FROM: Frank D. Kover, Supervisor
Hazard Assessment Group, OTS (WH-557)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTS (TS-788)

Submission Description

A 28-day subacute dermal toxicity study with 2,3-dibromopropanol (DBP) was submitted.

Submission Evaluation

This study demonstrates absorption of DBP via the skin and storage in liver and fat depots. The dose applied was small and below the exposure potential. Thus, the study was inadequate and inconclusive. This compound has potential for carcinogenic action and for damage to the liver, kidneys, and nervous system.

Current Production and Use

U.S. production is estimated at more than 10 million pounds in 1976. Major use is as an intermediate in the production of tris(2,3-dibromopropyl) phosphate and other flame retardants and as a reactive flame retardant itself. It is also used in the manufacture of insecticides and drugs. Recent actions by CPSC to regulate tris have likely depressed the domestic production and market for 2,3-dibromopropanol.

Recommendations

As part of our technology assessment program on flame retardants, this compound will receive some further attention in HAG.

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*NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: March 17, 1978

SUBJECT: Status Report 8EHQ-1277-0024

Approved ____________

Revision Needed ____________

FROM: Frank D. Kover, Supervisor
Hazard Assessment Group, OTS (WH-557)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTS (TS-788)

Submission Description

A 28-day subacute dermal toxicity study of 2,4,6-tribromophenol (TBP) was submitted.

Submission Evaluation

The skin lesions described are to be expected from this type of chemical. It is surprising that the TBP was not absorbed through the skin. The active compound was applied as a suspension in aqueous methylcellulose where an oil solution would have been more appropriate.

Current Production and Use

No production figures are available for this compound; however, SRI's Directory of Chemical Producers lists three producers, which implies an annual production in excess of 1,000 pounds. No information on uses was located.

Recommendations

Because this compound contains approximately 73% bromine, its potential for flame retardant use and PBB substitution should be evaluated. The HAG will review this compound as part of its ongoing study of flame retardant technology.

Several submissions have been received on this chemical; Section 8(a), CHIP, and/or NIOSH and OSHA involvement may be appropriate.

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*NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: March 28, 1978 (Revised May 10, 1979)

SUBJECT: Status Report 8EHQ-1277-0025

FROM: Frank D. Kover, Acting Director
Assessment Division, OTS (WH-557)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTS (TS-788)

Submission Description

Results of mutagenicity testing on three different brominated carbonates; each was positive in the Ames test. The tested chemicals were tetrabromodiallyl carbonate, tetrabromo(bisphenol A) bis(2,3-dibromopropyl carbonate), and pentabromophenyl-2,3-dibromopropyl carbonate.

Submission Evaluation

It was impossible to relate the chemicals listed in the transmitted letter to the coded reports submitted. However, all three compounds exhibited mutagenic activity in the Ames test.

These carbonates are probably hydrolyzed by enzymes to the brominated propanol, which is positive in the Ames test.

Current Production and Use

No production and use information was located for any of the three compounds identified in this submission; in addition, none were on the TSCA Candidate List.

Recommendations

These materials will be evaluated in the ongoing Assessment Division review of fire retardant technology.

Follow-up correspondence should request decoding of the studied compounds. A request for Section 8(a) information may be appropriate.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: March 17, 1978

SUBJECT: Status Report 8EHQ-1277-0027

FROM: Frank D. Kover, Supervisor
Hazard Assessment Group, OTS (WH-557)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTS (TS-788)

Submission Description

A summary of interim results on an inhalation study where pregnant female rats were exposed to benzene. An increased frequency of resorptions was observed.

Submission Evaluation

Fetal resorption usually has nothing to do with teratology, but indicates that the developing organism was lethally poisoned. Benzene exposure may involve immunologic phenomena within the fetus as well as the dam. Benzene has shown that it may alter stem-blood cells and certain important developing cells. The full study will be needed for proper evaluation.

Current Production and Use

Benzene is one of the largest volume primary organic compounds, with approximately 10 billion pounds produced per year. Benzene is a basic building block in the synthetic organic chemical industry. Uses include chemical intermediates, solvents, and antiknock gasoline additive.

Recommendations

OSHA is currently in rulemaking to lower benzene exposure in the workplace. CPSC is considering setting limits on benzene in consumer products. OAQPS has proposed to set benzene emissions standard under Section 112 of CAA. OPP is proposing to look at benzene as one of the inactives in pesticides.

Because of the extensive current activities, including our "15" chemicals exercise, a follow-up to obtain the full report is in order.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

EPA FORM 1320-6 (REV. 3-76)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: March 27, 1978 (Revised May 10, 1979)

SUBJECT: Status Report 8EHQ-0178-0028

FROM: Frank D. Kover, Acting Director
Assessment Division, OTS (WH-557)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTS (TS-788)

Submission Description

Interim results on a lifetime dermal application study with neopentyl glycol diacrylate are reported indicating that tumorigenic activity is beginning to show up in the test animals (mice).

Submission Evaluation

Some glycols, their ethers (cellosolve; carbitol), and their esters are absorbed through the skin and can be toxic by this route. It is not surprising that one of the esters, neopentyl glycol diacrylate, is carcinogenic. In part this would be determined by the rate of absorption from the subcutaneous tissues into the blood and the rate of hydrolysis of the ester and resultant epoxide formation. It would not be surprising if some other acrylate esters turn out to be carcinogenic.

Current Production and Use

No production figures are available; the U.S. ITC lists one producer, implying an annual production in excess of 1,000 pounds. No information on uses. Company brochure implies that it is part of UV-curable coatings, adhesives, and inks.

Recommendations

Await final results and evaluate need to test other members of the class if positive results are obtained. This chemical should be given CHIP consideration; a Section 8(a) information request may be in order.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: March 28, 1978

SUBJECT: Status Report 8EHQ-0178-0029

Approved ________________

Revision Needed ________________

FROM: Frank D. Kover, Acting Director
Assessment Division, OTS (WH-557)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTS (TS-788)

Submission Description

Preliminary report on high-boiling crude fractions and aromatic subfractions in a mouse skin-painting study indicating carcinogenic potential.

Submission Evaluation

It is not surprising that petroleum distillates produce cancer under the conditions of this experiment. Final risk evaluation will require analytical data on the nature and amounts of polynuclear aromatic hydrocarbons and carcinogenic metals (e.g., nickel) in the various fractions.

Current Production and Use

High-boiling petroleum crude fractions and aromatic subfractions are derived from crude oil during fractionation procedures. Information as to the production and use of these specific fractions is not available; however, they are likely to represent high-volume basic petroleum feedstocks.

Recommendations

Await final results.

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: March 17, 1978

SUBJECT: Status Report 8EHQ-0178-0030

Approved ______________

Revision Needed ______________

FROM: Frank D. Kover, Supervisor
Hazard Assessment Group, OTS (WH-557)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTS (TS-788)

Submission Description

Preliminary report on mutagenicity studies with crude shale oils.

Toxicological Evaluation

Almost any fossil-generated oil will probably have enough polynuclear aromatic hydrocarbons to be potentially carcinogenic.

Current Production and Use

Recovery of oil from oil shale is a growing technology as the result of the energy situation in the U.S. No firm production estimates are available at this time, and no known commercial distribution is evident at present.

Recommendations

Submission by a trade association may be inappropriate.

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EPA FORM 1320-6 (REV. 3-76)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: November 6, 1978

SUBJECT: Status Report 8EHQ-0678-0030 (supplement)

FROM: Frank D. Kover
Assessment Division, OTE/OTS

TO: Joseph J. Merenda, Director
Assessment Division, OTE/OTS

Approved ______

Revision Needed ______

Submission Description

A submission dated January 4, 1978, (8EHQ-0178-0030) reported preliminary results from a mutagenesis study of crude shale oils. This supplemental submission represents the final report for each of the three shale oils (designated R-01, R-03, and R-04).

Submission Evaluation

All three shale oils demonstrated mutagenic effects in *in vitro* bacterial assays with microsomal activation; R-01 also showed weak activity in these tests without activation. In the mouse lymphoma assay (*in vitro*), R-01 and R-04 were weakly positive while R-03 showed no mutagenic activity. Both R-03 and R-04 were not active in the *in vitro* rat bone marrow assay; R-01 increased the frequency of chromosomal aberrations in this test; however, the results were not statistically significant.

Evaluation of these findings indicates that these shale oils are potentially mutagenic to man and other organisms but the degree of the mutagenic hazard is not yet adequately defined. Further *in vivo* testing to determine the potential for an active form of these materials to reach the germ cells would help to clarify the potential hazards. Mutagenic activity appears to vary among the three shale oils; quantitative chemical analysis of each shale oil may provide some basis for the observed differences in mutagenic activity. For the present, it is suggested that shale oils be considered potential mutagens and that appropriate steps be undertaken to limit exposure.

Current Production and Use

Recovery of oil from oil shale is a growing technology as the result of the energy situation in the United States. No firm production estimates are available at this time, and no known commercial distribution is evident either.

***NOTE:** This status report is the result of a preliminary staff evaluation of information submitted to EPA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

Comments/Recommendations

(a) This submission and status report should be transmitted to OSHA, NIOSH, and U.S. DOE.

(b) The submitter should be asked to provide an analytical characterization of each sample, if available.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: March 17, 1978 (Revised May 10, 1979)

SUBJECT: Status Report 8EHQ-0278-0031P

FROM: Frank D. Kover, Supervisor
Hazard Assessment Group, OTS (WH-557)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTS (TS-788)

Submission Description

A chemical company maintenance man developed a rash on the lower leg.

Submission Evaluation

None possible.

Current Production and Use

No estimates possible.

Recommendations

None possible without some estimate as to the causative agent(s) for the rash; follow-up correspondence will request additional information. The submitter should be asked to support his contention that the information presented in this submission reasonably supports a conclusion of substantial risk. Any new information will be forwarded to NIOSH and OSHA.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

EPA FORM 1320-6 (REV. 3-76)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: March 17, 1978 (Revised May 10, 1979)

SUBJECT: Status Report 8EHQ-0178-0032

FROM: Frank D. Kover, Supervisor
Hazard Assessment Group, OTS (WH-557)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTS (TS-788)

Submission Description

Document describing results of a TL_m test and a fish accumulation study on 2,4,6-tribromophenol.

Submission Evaluation

The raw data on the fish accumulation study indicate approximately 100-fold accumulation of 2,4,6-tribromophenol (sodium salt) in carp under conditions somewhat inadequately described; e.g., what is the pH of the water and the pK_a of the test substance? The test species used is inappropriate and the degradation product may have greater bioaccumulation potential than the parent compound. It is unclear whether the analysis was for just the phenol or the Na salt.

The TL_m test also used an inappropriate test species (killifish) which can gulp air to avoid water exposure. The TL_m value may be artificially high.

Although these test results would not trigger the about-to-be published guidelines on substantial risk, it is likely that with a more appropriate animal model higher accumulation would be seen. (Based on discussions with Chuck Walker, March 7, 1979.)

Current Production and Use

No production figures are available; however, SRI's Directory of Chemical Producers lists three producers, which implies an annual production in excess of 1,000 pounds. No information on uses was located.

Recommendations

Potential for flame retardant use and PBB substitution should be evaluated. If that evaluation shows significance, more indepth review might be in order by Gil Veith at the Duluth Labs.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: March 28, 1978

SUBJECT: Status Report 8EHQ-0178-0033

FROM: Frank D. Kover, Acting Director
Assessment Division, OTS (WH-557)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTS (TS-788)

Submission Description

Preliminary report on weight differential in male rats in a 90-day subacute study on bis(1,3-dichloro-2-propyl)-3-chloro-2,2-dibromomethyl-1-propyl phosphate. Trade name is MC-984.

Submission Evaluation

The structure of MC-984 suggests potential for liver injury and carcinogenesis as well as delayed nerve damage. The early effect on growth suggests that liver injury is beginning to set in. Will have to await detailed protocol and results.

Current Production and Use

There is no information available on the production and use of this chemical. It is not contained in the TSCA Candidate List.

Recommendations

Await final results. This phosphate halocarbon will be reviewed for its possible uses in flame retardant technology as part of the Assessment Division's activity in that field. Section 8(a) information should be requested on this compound; several submissions have concerned this chemical (8EHQ-1277-0022; 8EHQ-0278-0048; 8EHQ-0278-0044; 8EHQ-0278-0053; 8EHQ-378-0100).

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: March 17, 1978

SUBJECT: Status Report 8EHQ-0178-0034

FROM: Frank D. Kover, Supervisor
Hazard Assessment Group, OTS (WH-557)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTS (TS-788)

Submission Description

Copies of letters issued to customers who use ammonium sulfate and/or aluminum sulfate in the manufacture or processing of cellulosic insulation materials, or resell either material for such end use application. Letters relate to possible corrosion of metal surfaces encountered in building structures.

Submission Evaluation

Aluminum compounds precipitate proteins but not to the extent of destroying them; therefore, the corrosive action does not extend to humans. Aluminum compounds, because of their mild precipitating action, have wide use in medicine. The acid ones are used as styptic pencils, anti-athlete foot remedies, antiperspirants, and numerous other uses on body surfaces. The alkaline oxides are used to neutralize stomach HCl during the treatment of peptic ulcer. There is no known health hazard due to the use of aluminum.

Current Production and Use

Total domestic production of ammonium sulfate was over 7 billion pounds in 1975. It is used in the manufacture of fertilizers, ammonium alum, fireproofing compositions, and water treatment chemicals. Other uses include tanning operations, food additives, and the production of viscose rayon.

Aluminum sulfate production in 1975 was in excess of 1.7 billion pounds. The chemical has a multitude of uses: leather tanning; paper sizing; dye mordant; fireproofing and waterproofing textiles; treating sewage; agricultural chemicals; lubricants; alums; catalyst, etc.

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Recommendations

Copies of this submission were sent to CPSC, TC, GSA, and DOE by the submitter. Suggest sending to HUD. No action warranted by EPA.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: March 28, 1978

SUBJECT: Status Report 8EHQ-0178-0035

FROM: Frank D. Kover, Acting Director
Assessment Division, OTS (WH-557)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTS (TS-788)

Approved ____________

Revision Needed ____________

Submission Description

Briefly summarizes results of subcutaneous injection of 1,2-dipiperidinoethane (400 to 800 mg/kg) in rats indicating focal brain injuries with the compound. Oral route is said not to be effective.

Submission Evaluation

Piperidines resemble nicotine in acting on ganglia of the autonomic nervous system. They also act on the brain, spinal cord, and skeletal muscles. The submitted evaluation of the environmental hazard potential may not be appropriate since it appears that skin and vapor absorbing potential of the compound crosses the blood-brain barrier and thus has the potential to produce chronic effects in the central nervous system.

A follow-up phone call revealed that the company has not done any pharmacology or toxicology studies with the compound.

Since this compound affects the central nervous system, it may have abuse potential.

Current Production and Use

No information on production or use is available; compound was not on the TSCA Candidate List.

Recommendations

Section 8(b) production data will be evaluated when available; further action on this chemical will depend on annual production volume.

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EPA FORM 1320-6 (REV. 3-76)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: March 17, 1978

SUBJECT: Status Report 8EHQ-0078-0036

FROM: Frank D. Kover, Supervisor
Hazard Assessment Group, OTS (WH-557)

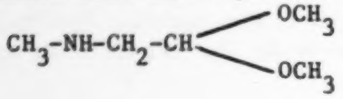
TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTS (TS-788)

Submission Description

Reports employee exposure to methylaminoacetaldehyde dimethyl acetal.

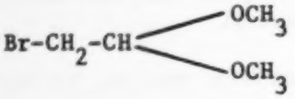
Submission Evaluation

The signs described in the exposed workers suggest that more was involved than NaOH and methylamine, although the latter is a strong irritant of the skin and of mucous membranes in the respiratory tract and eyes. Possible intermediates such as bromoacetaldehyde dimethyl acetal could produce similar irritations and in addition may produce irregularities of the heart beat and depress the central nervous system.



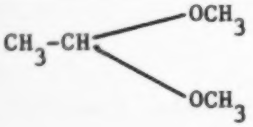
$CH_3\text{-}NH\text{-}CH_2\text{-}CH(OCH_3)_2$

is the formula for the product discussed.



$Br\text{-}CH_2\text{-}CH(OCH_3)_2$

is the intermediate.



$CH_3\text{-}CH(OCH_3)_2$

is the formula for a sleep-producing drug used in the past.

Current Production and Use

No information was located on the production and use of methylaminoacetaldehyde dimethyl acetal; however, the chemical is on the TSCA Candidate List.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

Recommendations

Although the submitter may use the best known precautions for handling toxicologically potent compounds, nevertheless, they should have pharmacology and toxicology data on methylaminoacetaldehyde dimethyl acetal and its intermediates. The submitter should supply physical-chemical data by which to gauge solubility and volatility.

Section 8(b) information will be checked on this chemical when the data become available; follow-up correspondence will be used to fill current information gaps concerning this compound. This notice and any subsequent information will be forwarded to NIOSH and OSHA for their use in any follow-ups.

The submitter should be asked to support his contention that the information presented in this submission reasonably supports a conclusion of substantial risk.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: March 27, 1978

SUBJECT: Status Report 8EHQ-0178-0037

FROM: Frank D. Kover, Acting Director
Assessment Division, OTS (WH-557)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTS (TS-788)

Submission Description

Report on analysis of water samples from Metro Sewer District, Louisville, KY, for hexachlorocylopentadiene and related compounds.

Submission Evaluation

The water and the water/soil samples that were analyzed were found to contain polychlorinated hydrocarbons which are considered to be undesirable contaminants of water and soil. When ingested, these compounds are not readily metabolized to water-soluble or polar compounds that can be excreted by the kidney. It has not been established that these compounds are significantly secreted into the feces via the enterohepatic circulation. This probably accounts for the fact that the polychlorinated compounds found by analysis in the samples tend to deposit in the fat depots.

Current Production and Use

Current production of hexachlorocylopentadiene is estimated at between 7 and 50 million pounds per year, with the major portion used as a chemical intermediate in the production of insecticides (many of which are now strictly controlled by EPA) and flame retardants.

Recommendations

HAG has prepared a profile on this chemical. An assessment document is in preparation by ORD.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: March 27, 1978

SUBJECT: Status Report 8FHQ-0178-0038

FROM: Frank D. Kover, Acting Director
Assessment Division, OTS (WH-557)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTS (TS-788)

Submission Description

Company correspondence on Louisville, KY, sewage treatment plant incident involving hexachlorocyclopentadiene.

Submission Evaluation

EPA should request the results of the examination of the victims flown to Atlanta. The conditions surrounding the exposure are vague; clarification is in order.

Current Production and Use

Current production of hexachlorocyclopentadiene is estimated at between 7 and 50 million pounds per year, with the major portion used as a chemical intermediate in the production of flame retardants and insecticides (many of which are now strictly controlled by EPA).

Related Past and Current Activities

Assessment Division has prepared a profile on hexachlorocyclopentadiene. A more detailed assessment document is in preparation by ORD.

Recommendations

Assessment Division will prepare follow-up letter requesting more information.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: March 17, 1978

SUBJECT: Status Report 8EHQ-0178-0039P

Approved ______________

Revision Needed ______________

FROM: Frank D. Kover, Supervisor
Hazard Assessment Group, OTS (WH-557)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTS (TS-788)

Submission Description

Internal company correspondence on primary skin irritation attributed to one or more intermediates of a trade name product.

Toxicological Evaluation

It would be necessary to see the complete skin testing data before concluding that problems will be experienced only with MAADMA and dibromoethyl acetate.

Low-molecular-weight acetals and halogenated ethyl acetates are strong primary irritants to the skin and are readily absorbed from it. Many of these are also strong ocular irritants and lacrimators.

The patients referred to in the letter of March 12, 1977, appear to be suffering from sensitivity reactions rather than simple primary irritation. The report of March 23, 1977, reinforces this idea. It is surprising that these people have not experienced respiratory symptoms.

Current Production and Use

VEL-5026 intermediates:

Cyclic amine: chemical description is insufficient.

Isocyanate dimer: chemical description is insufficient.

BADMA (butylamino dimethyl acetal?): no information located.

MAADMA (methylaminoacetaldehyde dimethyl acetal): no information located; TSCA Candidate List entry.

Dibromoethyl acetate: no information located.

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Recommendations

Personal data have been deleted. Any follow-up should be an OSHA concern. The submitter should be asked to support his contention that the submitted information presents reasonable support for a conclusion of substantial risk.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: March 17, 1978 (Revised May 10, 1979)

SUBJECT: Status Report 8EHQ-0178-0040P

Approved ____________

Revision Needed ____________

FROM: Frank D. Kover, Supervisor
Hazard Assessment Group, OTS (WH-557)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTS (TS-788)

Submission Description

Internal company memos on Firemaster 680 [1,2-bis(2,4,6-tribromophenoxy) ethane] identified as cause of skin rashes in employees.

Submission Evaluation

There appears to exist a current view that separating the polybrominated benzene rings in PBB by oxygen atoms or glycol chains will decrease toxicity. We do not have toxicity data from any manufacturer that establish this conclusively. Therefore, the potential for producing PBB-type lesions must be considered to be present.

In this instance, the skin rash may have been due to the volatile tribromophenol products released during processing. This, however, is not consistent with the experiences at another company. The relief reported by showering at the end of the day and putting on freshly laundered clothing at the start of the work day suggests that a nonvolatile substance is in continuous contact with the skin.

Current Production and Use

Not listed in TSCA Candidate List; probably flame retardant use.

Recommendations

This compound will be addressed in the HAG technology assessment activities on flame retardants.

Section 8(b) information should be checked on this compound. This submission should be referred to NIOSH and OSHA for appropriate follow-up.

***NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.**

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: March 17, 1978 (Revised May 10, 1979)

SUBJECT: Status Report 8EHQ-0178-0041)

FROM: Frank D. Kover, Supervisor
Hazard Assessment Group, OTS (WH-557)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTS (TS-788)

Submission Description

Documents were submitted relating to various glycols; most were copies of published articles. One item on acute toxicity studies on benzoyl chloride was also submitted.

Submission Evaluation

Glycols - The data submitted are contained in old (1939-41), well-established publications. No data are presented to show that the known hazards or toxicity of propylene glycols have been evaluated anew.

Benzoyl Chloride - The portion of the submission dealing with benzoyl chloride presents the results of acute toxicity studies that supposedly exonerate the chemical. We should consider calling for the experimental data. Benzoyl chloride is considerably more toxic than the glycols and has reportedly been linked to occupational cancers among Japanese benzoyl chloride workers.

Current Production and Use

Glycols - Accurate production figures on polypropylene glycols are not available due to its many captive uses. Actual production may range between 34 and 60 million pounds. Reported uses include: intermediate in urethane foams, adhesives, coatings, elastomers, plasticizers, etc.; hydraulic fluids; rubber lubricants; antifoam agents; paint formulations; laboratory reagents.

In 1975, production of propylene glycol was over 390 million pounds. The principal uses include organic synthesis, antifreeze solutions; solvents for fats, oils, waxes, resins, etc.; plasticizers, hydraulic fluids; bactericide; pharmaceuticals; brake fluids; and deicing fluids.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

Dipropylene glycol's 1975 production volume was 39 million pounds and was used in polyester and alkyl resins, reinforced plastics, plasticizers, and as a solvent.

Benzoyl Chloride - The annual production of benzoyl chloride is not known; however, the U.S. ITC records two domestic producers, implying production in excess of 1,000 pounds/year. Benzoyl chloride is used as an intermediate for the introduction of the benzoyl group into alcohols, phenols, and amines (i.e., acylation) and in production of benzoyl peroxide and various dye intermediates.

Recommendations

HAG has a report on ethylene glycol in preparation. The toxicity of the glycols in general appears low.

Benzoyl chloride, on the other hand, is reported to be a carcinogen. A chemical profile will be prepared in HAG. A request for Section 8(b) information may be in order.

The submitter should be asked to support his contention that the information presented in this submission reasonably supports a conclusion of substantial risk.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: March 17, 1978 (Revised May 10, 1979)

SUBJECT: Status Report 8EHQ-0278-0042

FROM: Frank D. Kover, Supervisor
Hazard Assessment Group, OTS (WH-557)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTS (TS-788)

Submission Description

Inhalation data on 39 fluorine compounds submitted by a manufacturer of research chemicals.

Submission Evaluation

Practically all of these fluorine compounds could present problems if they were in widespread use and improperly handled. Some are corrosive to the skin, and in some instances the action can be stopped only by injecting Ca gluconate beneath the exposed area. Some of these chemicals are highly irritating to the respiratory tract. A few of them affect the heart and the CNS. The latter effect can result in either anesthesia or convulsions.

Current Production and Use

A majority of the chemicals listed appear to have relatively specialized uses. Among the listed compounds having available use information are:

(a) dichlorotetrafluoroacetone - solvent; complexing agent
(b) hydrogen fluoride - large number of uses
(c) tetrafluoroethylene - monomer for "Teflon"
(d) chlorodifluoromethane - solvent; refrigerant.

Recommendations

Apparent low volume of most of these compounds does not support further action; however, this recommendation should be confirmed by a check of Section 8(b) information.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: March 17, 1978

SUBJECT: Status Report 8HEQ-0278-0043

Approved ______________

Revision Needed ______________

FROM: Frank D. Kover, Supervisor
Hazard Assessment Group, OTS (WH-557)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTS (WH-788)

Submission Description

An internal company memo concerning a spill of leptophos (or Phosvel) while being transported for export as a pesticide.

Submission Evaluation

This compound has the potential of causing delayed neurotoxicity in humans. Therefore, a clearer picture of the exposure should be requested. Those who were exposed should be medically examined at reasonable intervals for several months.

Current Production and Use

Production figures are not available; however, the submitter is the only producer. Only reported use is as an insecticide, but leptophos was never approved for use in the United States.

Recommendations

Bring to the attention of OPP.

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*NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: March 17, 1978

SUBJECT: Status Report 8EHQ-0278-0044

FROM: Frank D. Kover, Supervisor
Hazard Assessment Group, OTS (WH-557)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTS (TS-788)

Submission Description

Interim results reported on skin-painting study with naphthenic oil (blended petroleum product containing polynuclear aromatic hydrocarbons [PNA]) indicating strong skin tumorigenic activity in mice.

Submission Evaluation

This formulation probably contains sufficient polynuclear aromatic hydrocarbons to be carcinogenic under the test conditions. Production of this formulation has been stopped. The preliminary carcinogenicity data justify this action.

Current Production and Use

Production of these blends has been stopped.

Recommendations

The real problem here is PNA content of petroleum products. Significant exposures are likely to be primarily occupational, and therefore this submission should be referred to NIOSH and OSHA for appropriate follow-up.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: March 17, 1978

SUBJECT: Status Report 8EHQ-0278-0045

FROM: Frank D. Kover, Supervisor
Hazard Assessment Group, OTS (WH-557)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTS (TS-788)

Submission Description

Report on characteristics of waste effluent from ampicillin trihydrate manufacturing process. This chemical is a drug regulated by FDA. It appears to be a NPDES permit application.

Submission Evaluation

FDA is concerned with production of a uniform and acceptable product for clinical use. It does not concern itself with environmental effects. Release of penicillin may cause a variety of effects in those exposed to it. These may be skin reactions, sensitivity, or other systemic reactions. Skin reactions are more common during exposure to ampicillin. Bacteria exposed via environmental release of penicillin tend to become penicillin resistant.

Recommendations

Inappropriate for Section 8(e) review. Solvent use of methylene chloride and its handling and disposal are of interest to EPA. No further action necessary.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: March 17, 1978 (Revised May 10, 1979)

SUBJECT: Status Report 8EHQ-0178-0046

FROM: Frank D. Kover, Supervisor
Hazard Assessment Group, OTS (WH-557)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTS (TS-788)

Submission Description

Copy of NCI Bioassay Report on 2,4-dinitrotoluene (camera-ready, December 30, 1977).

Submission Evaluation

Although the NCI report probably exonerates 2,4-DNT from the stigma of a carcinogen, it gives only an opinion that the two hemangiomas and prostate adenocarcinoma in rats were not related to administration of the compound. This compound, in common with many other aromatic nitro compounds, can injure the bone marrow to cause anemia. It also oxidizes the hemoglobin in red blood cells and destroys their oxygen-carrying capacity. It can also cause liver injury.

Current Production and Use

Domestic production of 2,4-dinitrotoluene was reported by the U.S. ITC to be over 300 million pounds per year in 1975. In addition, production of a mixture of 2,4- and 2,6-dinitrotoluene was greater than 270 thousand pounds in 1975. Much of the 2,4-dinitrotoluene produced is used captively to manufacture diaminotoluene (used to make toluene-2,4-diisocyanate), dyes, toluidines, and other products. It is also used as a gelatinizing and waterproofing agent in explosives.

Recommendations

More information about the biotransformation of 2,4-DNT by animals and man and its potential for skin sensitization is needed. HAG will investigate to determine if such information is available and evaluate the need for further testing. The submission of NCI and other Government reports is not required under Section 8(e).

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: March 17, 1978

SUBJECT: Status Report 8EHQ-0278-0047

FROM: Frank D. Kover, Supervisor
Hazard Assessment Group, OTS (WH-557)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTS (TS-788)

Submission Description

Results of an Ames test on 1,2-epoxy-3-methoxypropane (EMP).

Submission Evaluation

It is not surprising, in light of the epoxy group, that EMP is a mutagen not requiring activation.

Current Production and Use

No information on production and use is reported in the secondary literature; the chemical is not on the TSCA Candidate List.

Recommendations

No immediate action is necessary; a request for Section 8(b) information may be in order.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

DATE: May 4, 1978 (Revised May 10, 1979) Approved____________

SUBJECT: Status Report 8EHQ-0278-0048

Revision
Needed ____________

FROM: Frank D. Kover, Acting Director
Assessment Division, OTS (TS-792)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTS (TS-792)

Submission Description

A study investigating the toxicity of MC-984* on bluegill sunfish and rainbow trout. This notice was declassified on April 13, 1978.

*MC-984: bis(1,3-dichloro-2-propyl)-3-chloro-2,2-dibromomethyl-1-propyl phosphate.

Submission Evaluation

MC-984 is toxic to bluegills and rainbow trout at levels which should be of environmental concern. Even at the lowest concentrations tested (1 mg/l), bluegills demonstrated behavioral effects (labored breathing, disorientation) and rainbow trout exhibited erratic swimming (at concentrations greater than 0.56 mg/l). MC-984 may pose problems in an aquatic ecosystem as trout and bluegill appear to be fairly sensitive.

Current Production and Use

There is no information available in the production and use of this chemical; it is not contained in the TSCA Candidate List.

Recommendations

Many submissions have been received on this chemical (8EHQ-1277-0022; 8EHQ-0178-0033; 8EHQ-0278-0049; 8EHQ-0053; 8EHQ-0378-0100).

(a) Section 8(b) data should be checked for evidence of commercial significance.

(b) MC-984 may be a candidate for CHIP and/or NIOSH/OSHA consideration.

(c) The submission should be referred to ERD for further evaluation.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: April 25, 1978 (Revised May 10, 1979) Approved__________

SUBJECT: Status Report 8EHQ-0278-0049

Revision
Needed __________

FROM: Frank D. Kover, Acting Director
Assessment Division, OTS (TS-792)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTS (TS-792)

Submission Description

Paper describing the results of a rat dominant lethal assay of MC-984 [bis(1,3-dichloro-2-propyl)-3-chloro-2,2-dibromomethyl-1-propyl phophate].

Submission Evaluation

Dominant lethal tests are usually very insensitive; the fact that positive dose-related effects are seen is very suspicious. Possible causes are direct or hormonal effects on sperm or sperm development or hormonal blocking effects on females through transmission of the chemical in the seminal fluid.

Current Production and Use

There is no information available on the production and use of this chemical; it is not contained in the TSCA Candidate List.

Recommendations

Many submissions have been received on this chemical (8EHQ-1277-0022; 8EHQ-0178-0033; 8EHQ-0278-0048; 8EHQ-0278-0053; 8EHQ-0378-0100;8EHQ-0378-0107).

MC-984 may be a candidate for CHIP and NIOSH/OSHA referral if the 8(b) data indicate that it is a commercially significant chemical.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: May 11, 1978 (Revised May 10, 1979)

Approved ____________

SUBJECT: Status Report 8EHQ-0278-0050

Revision Needed ____________

FROM: Frank D. Kover, Acting Director
Assessment Division, OTS (TS-792)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTS (TS-792)

Submission Description

Acute toxicity studies of Polyvel M-106 polymer (a mixture of petroleum-derived hydrocarbon resins) in rabbits and rats. This notice was declassified on April 13, 1978.

Submission Evaluation

Polyvel M-106 appears to have no significant acute toxicity either for the skin or ocular mucous membranes or by systemic absorption from the gastrointestinal tract. This lack of acute toxicity does not necessarily mean, however, that either the polymer or the plasticizer will not have chronic effects, particularly as sensitizing agents.

Current Production and Use

No production and use information is available; the chemical is not contained in the TSCA Candidate List.

Recommendations

(a) Section 8(b) data should be checked to determine the annual production of this material, and if significant, consider a CHIP investigation.

(b) The submitter should be asked to support his contention that the information presented in this submission reasonably supports a conclusion of substantial risk.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: June 14, 1978 (Revised May 10, 1979)

SUBJECT: Status Report 8EHQ-0278-0051

Approved ____________

Revision Needed ____________

FROM: Joseph J. Merenda, Acting Director
Assessment Division, OTE/OTS (TS-792)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTE/OTS (TS-792)

Submission Description

Results of Ames-type test (with and without metabolic activation) on FM-100 (major constituent is hexabromocyclododecane) and an FM-100 (production?) residue. This notice was declassified on April 13, 1978.

Submission Evaluation

FM-100 has limited solubility under the conditions of this test, and the absence of mutagenic activity in this study may be related to its limited solubility. The "FM-100 residue" (inadequately characterized), however, did show positive results with strain TA 1535. The main difficulty with this report is the lack of an adequate analytical characterization of the components in the FM-100 residue. In addition, the report does not show how the solubility problems affect the results or how they can be circumvented.

Current Production and Use

Hexabromocyclododecane (HBCD) is listed in the Directory of Chemical Producers, thus indicating that it is produced in commercial quantities (>1000 pounds/year). HBCD is used as a fire retardant in copolymers of styrene with acrylonitrile, N-vinylpyrrolidinone, divinylbenzene, methyl acrylate, poly(methyl methacrylate), or polyethylene. It is also used as a fire retardant in molded and foamed thermoplastic styrene and in polypropylene-based molding compositions. When incorporated into these plastics, HBCD imparts a self-extinguishing property to the material.

***NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.**

HBCD is also used in the production of adhesives used for luting polystyrene foam sheets. This use arises from its ability to reduce the molding time necessary for cellular polystyrene particles to form into a compact foam block.

Comments/Recommendations

FM-100 will be evaluated as part of the ongoing Assessment Division examination of flame retardant technology. This chemical has been the subject of three other submissions (8EHQ-0278-0065; 8EHQ-0378-0088; 8EHQ-0478-0137).

(a) This submission, like others, was deficient in a number of areas. The notifier should be asked to provide adequate analytical data on the composition of both mixtures tested, but especially the FM-100 residue. Physical-chemical data on FM-100 and the residue would also be of value.

(b) Section 8(b) data should be checked to determine the commercial significance of this compound. FM-100 is listed in the recent "Bromine Based Fire Retardants" report. FM-100 may be a CHIP candidate.

(c) The submitter should be asked to support his contention that the information presented in this submission reasonably supports a conclusion of substantial risk.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: March 17, 1978

SUBJECT: Status Report 8EHQ-0278-0052P

FROM: Frank D. Kover, Supervisor
Hazard Assessment Group, OTS (WH-557)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTS (WH-788)

Submission Description

Company memos and correspondence relating to exposure of personnel to phosphonium salts.

Submission Evaluation

If the compound in question is phosphonium iodide, then a serious toxicity problem may exist. Phosphonium iodide is readily decomposed to phosphine. Phosphine, in addition to being a pulmonary irritant, is also capable of hemolyzing red blood cells. This can result not only in anemia, but also in blockage of blood vessels by the released hemoglobin, particularly in the kidney. Milder exposure results in liver damage.

Organic phosphonium compounds simulate quaternary ammonium compounds in their toxic effects and result in falling blood pressure, cardiac irregularities, convulsions, and finally complete paralysis of muscles of respiration.

The information submitted does not indicate what the offending agent or agents could be. It is essential to obtain this information. The laboratory reports indicate that liver injury, anemia, and possible neuromuscular involvement were present.

Current Production and Use

Insufficient detail provided in submission to develop production and use data.

Recommendations

Personal data deleted. Followup correspondence should be sent requesting more information on the causative agent(s). The submission and any follow-up data should be referred to NIOSH and OSHA for appropriate action.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: May 11, 1978 (Revised May 10, 1979) Approved__________

SUBJECT: Status Report 8EHQ-0278-0053

Revision
Needed __________

FROM: Frank D. Kover, Acting Director
Assessment Division, OTS (TS-792)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTS (TS-792)

Submission Description

Study reporting the results of a mutagenicity evaluation of MC-984 [bis (1,3-dichloro-2-propyl)-3-chloro-2-2-dibromoethyl-1-propyl phosphate]) using the mouse lymphoma assay. This notice was declassified on April 13, 1978.

Submission Evaluation

MC-984 appears to be mutagenic for mouse lymphoma cells. We do not agree with the submitted interpretation that the results may have been an artifact due to the toxicity of the compound. The purity of the compound tested is not given in the report. The clouding that occurred when the stock solvent was added to the growth medium indicates low solubility in aqueous media, and suggests that very little of the compound was available for reaction with the mouse cells. *In vivo* conditions would most likely increase the amount of compound available to cells.

Current Production and Use

There is no information available on the production and use of this chemical; it is not contained in the TSCA Candidate List.

Comments/Recommendations

Many submissions have been received on this chemical (8EHQ-1277-0022; 8EHQ-0178-0033; 8EHQ-0278-0048; 8EHQ-0278-0049; 8EHQ-0378-0107).

Section 8(b) should be checked to assist in reaching a disposition decision. If MC-984 is a commercial chemical of some significance, consideration should be given to CHIP and/or NIOSH/OSHA evaluation of the studies.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: May 8, 1978 (Revised May 10, 1979)

SUBJECT: Status Report 8EHQ-0278-0054

FROM: Frank D. Kover, Acting Director
Assessment Division, OTS (TS-792)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTS (TS-792)

Submission Description

Sheet describing residue assays of hexachlorocyclopentadiene (HEX) and related compounds in fish taken from the Mississippi River around Memphis, TN. This information is supplemental to 8EHQ-1177-0013 from the same notifier. This notice was declassified on April 13, 1978.

Submission Evaluation

Monitoring information revealed that HEX and related compounds were identified in catfish and carp (numbers tested?) taken from the Mississippi River. The organs used for this residue analysis were not noted--was this a whole fish study? Other chemicals included in this report were: chlordene, octachlorocyclopentene, etc. The levels of HEX found were very low (below detection limits?). Octachlorocyclopentene was detected at 0.75 ppm in a catfish 1 mile downstream from Memphis(?).

Current Production and Use

All compounds listed are pesticides or related chemicals used in the manufacture of pesticides (possibly flame retardants also).

Related Past and Current Activities

A chemical profile on hexachlorocyclopentadiene is available from the Assessment Division; ORD is preparing an assessment report on this chemical.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

Recommendations

The ORD contact should forward a copy of this status report to the pertinent ORD people working on hexachlorocyclopentadiene (pending confidentiality determination). Several other submissions have been received on this and related chemicals (see 8EHQ-0278-0061 for a listing of related submissions).

(a) These data and the earlier results (8EHQ-1177-0013) should be forwarded to the FDA Bureau of Foods and OPP (pending confidentiality determination).

(b) The submitter should be contacted about the questions raised concerning the study.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: June 22, 1978 (Revised May 10, 1979)   Approved____________

SUBJECT: Status Report 8EHQ-0278-0055

Revision
Needed ____________

FROM: Joseph J. Merenda, Acting Director
Assessment Division, OTE/OTS (TS-792)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTE/OTS (TS-792)

Submission Description

Information on the neurotoxic effects of triphenylphosphine supplemental to that received in submission 8EHQ-1177-0015. The submission consists of a (1962) published German language reference to the data referred to in the earlier submission. This notice was declassified on April 19, 1978.

Submission Evaluation

Neurotoxicity of alkyl and aryl metallic organic compounds is well established. The qualitative aspects of the toxicity vary according to the particular compound. For instance, many low-molecular-weight aliphatic metals have sufficient lipid solubility to distribute themselves freely through the brain and penetrate the neuronal cells. During this phase, they tend to act like general anesthetics and produce the signs of the early stages of anesthesia, i.e., a mixture of excitement and depression. This is usually a transient phase of a few minutes up to 1 hour. Some of the alkyl metal remains within the brain cells, and usually one alkyl group is removed to give rise to ionic forms that affect enzymes involved in metabolism. The effect on metabolism is usually slow and may not manifest itself for several hours or several days, when the animal begins to exhibit signs of fear and other changes usually culminating in epileptic-form seizures. Nonetheless, there is apparently little demonstrable permanent peripheral nerve injury.

On the other hand, some alkyl metals, such as methyl mercury, and most aryl metals penetrate slowly and have a longer latent period of action. The damage to the brain cells and peripheral nerves that is produced by these compounds is practically irreversible as in the case of methyl mercury. Unlike some of the other aryl metals, the subject chemical in this submission, triphenylphosphine, tends to confine its effects to the peripheral nervous system.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

These alkyl metals and metalloids which are highly reactive with oxygen and of low lipid solubility, such as some phosphines, arsines, and stibines, react with the oxygen in red blood cells and hemolyze them. They also produce severe irritation of the respiratory tract (refer to 8EHQ-1177-0014 and 8EHQ-1177-0015 for additional discussion of triphenylphosphine).

Current Production and Use

No production figures are available; however, the SRI Directory of Chemical Producers (1975) lists four producers, implying an annual production greater than 1,000 pounds. Reported uses include synthesis of organic compounds (including homogeneous catalysts), phosphorus salts, and other phosphorus compounds.

Recommendations

The toxicological information contained in this submission may be of interest to MCA (or some other body) for inclusion in product safety data sheets.

(a) Section 8(b) data should be checked to determine the production level of triphenylphosphine.

(b) If production volume is sufficient, CHIP scrutiny may be in order.

(c) The information should be forwarded to NIOSH and OSHA.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: June 22, 1978

SUBJECT: Status Report 8EHQ-0278-0056

Approved ____________

Revision Needed ____________

FROM: Joseph J. Merenda, Acting Director JM
Assessment Division, OTE/OTS (TS-792)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTE/OTS (TS-792)

Submission Description

Two reports outlining the results of sterility tests conducted on employees who were occupationally exposed to DBCP (1,2-dibromo-3-chloropropane) and tris (tris(2,3-dibromopropyl) phosphate). This notice was declassified on 4/13/78.

Submission Evaluation

The significant point in this submission is that 12 workers had been exposed to DBCP and tris for a sufficient length of time to have obviously inadequate reproductive ability. These 12 workers had sperm counts of less than 20 X 10^6/cc and 11/12 were also deficient in sperm motility. In addition, eight of the men from this group also had inadequate sperm morphology. The 12 men with hypospermia or oligospermia would still be incapable of fertilizing the ovum even though the sperm morphology may be adequate. The deficient motility might prevent the sperm from traveling through the cervix to reach the ovum and if they did reach the ovum, might not be able to penetrate the cumulus or outer covering of the ovum.

The duration and intensity of exposure are not indicated in the reports for either group. The data, however, may contain a Deleterious Dose$_{50}$ (ED$_{50}$) relationship. Dose-response phenomena are graded rather than all-or-none. An ED$_{50}$ means that increasing the exposure will result in more subjects being affected. Thus, the other 12 men who test out as having normal function may not have been exposed for a sufficient length of time and it might be expected that they could also develop reproductive incapability.

The attending physician's explanation of LH and FSH functions is partial. LH (luteinizing hormone) and FSH (follicle stimulating hormone) are produced by the pituitary gland and are responsible for gonadal function in men and women. They are part of an intricate feedback system that regulates the formation of sex hormones and sperm. When the action of the

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***NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.**

gonads decreases, more gonadotrophins are released from the pituitary. The attending physician may be intimating that the slight elevation of LH and FSH in the ten affected men indicates that the damage to the testis is not severe. The intimation is in error because the testis also produces estrogens that are strong inhibitors of LH and FSH. The regulation and feedback mechanism between pituitary and gonads is much more intricate than the reports states. In this instance, the LH and FSH determinations have dubious significance.

Current Production and Use

Unconfirmed reports indicate that tris is no longer being produced domestically; 1975 production is estimated at 7-12 million lbs. Tris was previously used as a textile flame retardant, however, the CPSC has moved against this use. The only reported current use is as a flame retardant for plastics.

OPP has conditionally suspended DBCP for some uses and completely suspended it for all other uses. Conditional suspension means that only certified pesticide applicators can apply DBCP. DBCP has no known nonpesticidal uses.

Comments/Recommendations

In view of (1) unconfirmed reports that tris is no longer manufactured, (2) NCI's (unpublished) conclusions that the chemical is a carcinogen, (3) CPSC's announced policy to ban the sale of tris-treated children's sleepwear, and (4) EPA/OPP's action to restrict the only known (pesticidal) uses of DBCP:

a) 8(b) data should be checked for evidence of continued domestic production of tris. This follow-up should include the identification of possible tris importers. 8(a) data should also be checked to confirm whether DBCP is being manufactured for other than pesticidal uses.

b) Recommend to Office of Chemical Control that it consider developing a significant new use rule for DBCP.

c) This submission should be referred to OSHA, NIOSH, CPSC, OPP/OTS, and TS/OE.

d) The notifier should be requested to provide the fertility history of the cohort thus supplying baseline information on the fertility of the exposed workers. A more in-depth epidemiology study may be needed at a later date.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: May 2, 1978 (Revised May 10, 1979)

Approved ____________

SUBJECT: Status Report 8EHQ-0278-0057S

Revision Needed ____________

FROM: Frank D. Kover, Acting Director
Assessment Division, OTS (TS-792)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTS (TS-792)

Submission Description

A letter outlining the results of three in vitro tests (Ames test; mouse lymphoma test; and mammalian cell transformation test) on AP-1155 (generically described as polyaromatic amines).

Submission Evaluation

Because this is a mixture, only qualitative statements about toxicity are applicable. Polyaromatic amines (polycyclic aromatic amines) are a class of well-known carcinogens. This mixture, therefore, has great potential carcinogenicity. A battery of short tests has increased the possibility of requiring long-term carcinogenicity testing.

The material is a polymer. Although the annual production is confidential, what is the ultimate disposition of the final product, particularly when discarded? Does AP-1155 accumulate or is it degraded? Is there a solubility and stability curve related to pH above 7? This is important in the context of skin absorption of the material. (Is the material a skin sensitizer? a light sensitizer? How leachable is the chemical, especially from the finished product in alkaline media?)

Current Production and Use

No information on production and use is available in the secondary literature; the chemical is not entered in the TSCA Candidate List.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

Recommendations

(a) This submission should be referred to NIOSH and OSHA for appropriate follow-up, if any.

(b) The claimed production volume should be confirmed with a check of the data.

(c) Additional information should be requested from the submitter to answer the questions posed in the evaluation section above.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: May 5, 1978 (Revised May 10, 1979)　Approved__________

SUBJECT: Status Report 8EHQ-0278-0058

Revision
Needed __________

FROM: Frank D. Kover, Acting Director
Assessment Division, OTS (TS-792)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTS (TS-792)

Submission Description

Studies reporting the acute toxicity of chlorendic anhydride to rainbow trout and bluegill sunfish. This notice was declassified on April 13, 1978.

Submission Evaluation

The toxicity of chlorendic anhydride to bluegills and trout was fairly low in this test, although the experimental conditions were far from ideal. Among the problem areas were: precipitation of chlorendic anhydride from solution leading to lower water concentrations than reported; lack of physical/chemical data on the chemical (pK_a, solubility, etc.); lack of distinction between the effects of lowered pH versus those of the chemical.

Current Production and Use

An estimated 10 million pounds of chlorendic acid/chlorendic anhydride were produced in 1974, with an expected growth rate of 10% per year through 1980. Reported uses of chlorendic anhydride include: flame-resistant polyester resins; hardening agent for epoxy resins; chemical intermediate; source of chlorendic acid.

Related Past and Present Activities

Several other submissions have been received on this compound (8EHQ-0278-0059; 8EHQ-0378-0094; 8EHQ-0378-0101).

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

Comments/Recommendations

(a) The physical/chemical data should be requested in follow-up correspondence to the submitter.

(b) This information should be referred to the ORD contact for distribution to the people working on the hexachlorocyclopentadiene assessment document.

(c) The submitter should be asked to support his contention that the information presented in this submission reasonably supports a conclusion of substantial risk.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: May 11, 1978 (Revised May 10, 1979) Approved__________

SUBJECT: Status Report 8EHQ-0278-0059

Revision Needed __________

FROM: Frank D. Kover, Acting Director
Assessment Division, OTS (TS-792)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTS (TS-792)

Submission Description

Study reporting the acute toxicity of chlorendic anhydride to Daphnia (water flea). This notice was declassified on April 13, 1978.

Submission Evaluation

Chlorendic anhydride was found to be toxic to Daphnia at relatively high concentrations. The apparently low solubility of the chemical in water appears to minimize the toxic effects on pelagic organisms but may have implications for benthic organisms. Once again (see 8EHQ-0278-0058) the test chemical precipitated from solution and likely lowered the actual water concentration below the calculated value. No physical/chemical data on chlorendic anhydride were reported.

Current Production and Use

An estimated 10 million pounds of chlorendic anhydride were produced in 1974, with an expected annual growth rate of 10% through 1980. Reported uses of chlorendic anhydride include: flame-resistant polyester resins; hardening agent for epoxy resins; chemical intermediate; source of chlorendic acid.

Related Past and Present Activities

Some discussion of chlorendic anhydride can be found in the Assessment Division report on hexachlorocyclopentadiene.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

Recommendations

Several other submissions have been received on this compound (8EHQ-0278-0058; 8EHQ-0378-0094; 8EHQ-0378-0101).

(a) Follow-up correspondence to obtain the physical/chemical data on chlorendic anhydride may be of value. The submitter should also be asked to support his contention that the information presented in this submission reasonably supports a conclusion of substantial risk.

(b) The ORD contact should inform the ORD people working on hexachlorocyclopentadiene of the results of this study for possible inclusion in their HEX report.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: May 3, 1978 (Revised May 10, 1979)

Approved ______

SUBJECT: Status Report 8EHQ-0278-0060

Revision Needed ______

FROM: Frank D. Kover, Acting Director
Assessment Division, OTS (TS-792)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTS (TS-792)

Submission Description

Study reporting the acute toxicity of MC 948* to Daphnia (water flea). This notice was declassified on April 13, 1978.

*MC 948: primary constituent is bis(tribromoneopentyl) pentaerythritol cyclic disphosphate; same as VC 948.

Submission Evaluation

The (acute, static) LC_{50} for MC 948 in Daphnia could not be determined as there was no significant mortality at the concentrations tested (up to 100 mg/l). These concentrations are nominal and may be significantly higher than the actual values because the MC 948 precipitated out of solution at concentrations greater than 18 mg/l. The test gives no useful information about the acute toxicity of MC 948 to Daphnia.

Current Production and Use

No information is available on the production and use of MC 948, nor is it entered in the TSCA Candidate List.

Recommendations

Several other submissions have been received on this chemical (8EHQ-0278-0071; 8EHQ-0378-0092; 8EHQ-0378-0098).

(a) Section 8(b) data should be checked for evidence of commercial significance.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

(b) The chemical name provided in the submission is trivial and should be clarified through follow-up correspondence; a drawing of the molecular structure should also be required.

(c) If commercially viable, MC 948 may be a candidate for CHIP and/or NIOSH/OSHA consideration.

(d) The submitter should be asked to support his contention that the information presented in this submission reasonably supports a conclusion of substantial risk.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: May 8, 1978

Approved __________

SUBJECT: Status Report 8EHQ-0278-0061

Revision Needed __________

FROM: Frank D. Kover, Acting Director
Assessment Division, OTS (TS-792)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTS (TS-792)

Submission Description

Acute toxicity study of the effects of hexachlorocyclopentadiene on Daphnia (water flea). This notice was declassified on April 13, 1978.

Submission Evaluation

Hexachlorocyclopentadiene exhibited a high degree of toxicity to Daphnia in acute static tests. The LC_{50} was 52.4 μg/l; DO and pH were kept at acceptable levels throughout the tests. The results indicate that hexachlorocyclopentadiene would cause serious problems if released into the environment such that Daphnia and (potentially) other aquatic organisms were exposed to it.

Current Production and Use

Precise production figures are not available; the U.S. ITC lists two producers, which implies an annual production of greater than 1,000 pounds. Actual production is likely to be appreciably larger (production of chlorendic acid/anhydride alone consumed 7-7.5 million pounds in 1974). Hexachlorocyclopentadiene is used as a chemical intermediate in the production of insecticides (aldrin, dieldrin, endrin, Kepone^{R}, mirex, etc.), chlorendic acid/anhydride, fire retardants, and dyes.

Related Past and Current Activities

A chemical profile on hexachlorocyclopentadiene is available from the Assessment Division. ORD is currently preparing an assessment document on this chemical.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

Recommendations

Several other submissions have been received on this chemical (or the related compound chlorendic anhydride): 8EHQ-0977-0004; 8EHQ-1177-0013; 8EHQ-0178-0037; 8EHQ-0178-0038; 8EHQ-0278-0058; 8EHQ-0278-0059; 8EHQ-0278-0062; 8EHQ-0278-0064; 8EHQ-0378-0094; 8EHQ-0378-0101; 8EHQ-0378-0102. The ORD contact should see that the pertinent people in ORD receive the available information for inclusion in their report.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: May 8, 1978 (Revised May 10, 1979)

SUBJECT: Status Report 8EHQ-0278-0062

FROM: Frank D. Kover, Acting Director
Assessment Division, OTS (TS-792)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTS (TS-792)

Submission Description

Acute toxicity studies of octachlorocyclopentene in rabbits and rats. This notice was declassified on April 13, 1978.

Submission Evaluation

The submitter acknowledges that the compound is a primary eye irritant. The submitter further acknowledges that the compound is mildly irritating to the skin as a primary irritant. No studies were submitted as to its skin sensitizing properties.

The steep LD_{50} curve suggests that the compound may be unusually toxic. If the safe ceiling dose is exceeded slightly, the outcome may be lethal. A dose-response curve study should be carried out in the range between 500-1,000 mg/kg. This should establish some indication of the margin of safety. Since the slope is steep, the increments of dosing should be small.

Current Production and Use

No production and use information was located on this chemical, nor was it contained in the TSCA Candidate List.

Comments/Recommendations

The chemical may have some flame retardant applications and will be evaluated in that context in the ongoing Assessment Division study of flame retardant technology.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

(a) Section 8(b) data on this chemical should be checked when they become available.

(b) A copy of the status report should be sent to the notifier as a way of suggesting the need for possible additional testing on this compound.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: May 12, 1978 (Revised May 10, 1979) Approved__________

SUBJECT: Status Report 8EHQ-0278-0063

Revision
Needed __________

FROM: Frank D. Kover, Acting Director
Assessment Division, OTS (TS-792)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTS (TS-792)

Submission Description

Company memo describing occupational health problems associated with methendic anhydride/maleic anhydride. This notice was declassified on April 13, 1978.

Submission Evaluation

The symptoms reported in the notice (irritation to eyes and respiratory tract) correlate with those ascribed to maleic anhydride. No information was available to judge whether or not methendic anhydride may contribute to the observed symptoms.

Maleic anhydride is often produced from benzene feedstocks. Because benzene is a well-known bone marrow depressant and maleic anhydride is likely to have profound effects on other organ systems, a study should be initiated to assess possible synergistic effects.

Some acylating agents have demonstrated carcinogenic or mutagenic activities. Because maleic anhydride is a potent acylating agent, its mutagenic/carcinogenic potential is perhaps an area which should be investigated.

Current Production and Use

The U.S. ITC reports that approximately 216 million pounds of maleic anhydride were produced in 1975. The major uses are in polyester resins, alkyd coating resins, pesticides, and permanent-press resins for textiles. "Methendic" anhydride is a trademarked mixture of bicylic unsaturated dibasic anhydrides. It is used as a cross-linking or curing agent in epoxy-type resin systems. No production figures are available.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

Comments/Recommendations

(a) The submission notes that a manufacturer's safety data sheet is available on methendic anhydride; because this is a trade name mixture and little information is available, the data sheet should be requested.

(b) Production volume of methendic anhydride should be determined with a check of the 8(b) data.

(c) Follow-up correspondence should request the results of any medical evaluation conducted on exposed workers.

(d) Maleic anhydride will undergo CHIP scrutiny in the near future. Depending on the conclusions of the CHIP review, there may be need for monitoring activities to measure benzene and maleic anhydride levels at production sites. If the monitoring effort identifies a potential problem, OTS should consider initiation of the synergistic effects study, possibly under TSCA Section 4.

(e) This information should be referred to NIOSH and OSHA.

(f) The submitter should be asked to support his contention that the information presented in this submission reasonably supports a conclusion of substantial risk.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: June 15, 1978

Approved ___________

SUBJECT: Status Report 8EHQ-0278-0064

Revision Needed ___________

FROM: Joseph J. Merenda, Acting Director
Assessment Division, OTE/OTS (TS-792)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTE/OTS (TS-792)

Submission Description

Acute oral toxicity study of hexachlorocyclopentadiene in albino mice. This notice was declassified on April 13, 1978.

Submission Evaluation

Hexachlorocyclopentadiene is a halogenated ring hydrocarbon which in larger doses produced death within 4 hours. This is indicative of central nervous system effects on respiration and/or circulation. The lower doses and some of the higher doses produced delayed deaths which suggest kidney and/or liver impairment. In the absence of biotransformation and pharmacokinetic data, it is difficult to evaluate accurately the potential toxicity of this compound. Like many halogenated compounds, particularly polyhalogenated, it probably has carcinogenic potential either by virtue of ring opening or dehalogenation at points which can give rise to epoxides.

Current Production and Use

Precise production figures are not available; the U.S. ITC lists two producers, which implies an annual production of greater than 1,000 pounds. Actual production is likely to be appreciably larger (production of chlorendic acid/anhydride alone consumed 7-7.5 million pounds in 1974). Hexachlorocyclopentadiene is used as a chemical intermediate in the production of insecticides (aldrin, dieldrin, endrin, Kepone^R, mirex, etc.), chlorendic acid/anhydride, fire retardants, and dyes.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

Related Past and Present Activities

A chemical profile on hexachlorocyclopentadiene is available from the Assessment Division; ORD is currently preparing an assessment document on this chemical.

Comments/Recommendations

Several other submissions have been received on this chemical (or the related compound chlorendic anhydride): 8EHQ-0977-0004; 8EHQ-1177-0013; 8EHQ-0178-0037; 8EHQ-0178-0038; 8EHQ-0278-0054; 8EHQ-0278-0058; 8EHQ-0278-0059; 8EHQ-0278-0061; 8EHQ-0378-0094; 8EHQ-0378-0101; 8EHQ-0378-0102; 8EHQ-0378-0110; 8EHQ-0478-0127; 8EHQ-0478-0134.

The ORD contact should see that the pertinent people in ORD receive the available information on hexachlorocyclopentadiene for use in their assessment report.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: June 15, 1978 (Revised May 10, 1979)   Approved ____________

SUBJECT: Status Report 8EHQ-0278-0065

Revision
Needed ____________

FROM: Joseph J. Merenda, Acting Director
Assessment Division, OTE/OTS (TS-792)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTE/OTS (TS-792)

Submission Description

Acute toxicity studies of hexabromocyclododecane (FM 100) in rabbits and rats. This notice was declassified on April 13, 1978.

Submission Evaluation

The magnitude of toxicity during an acute study with compounds such as FM 100 has limited value. It is significant that an application of FM 100 to the skin of rabbits resulted in sufficient absorption to cause loss in body weight in one male and one female rabbit. This weight loss will have to be accounted for. If it is real, it suggests that small amounts of FM 100 present in the organism can produce toxic effects.

It is significant that a single oral dose of FM 100 resulted in corneal opacity (which persisted) and drooping or closing of the eyelids in male rats. The type of corneal opacity is not described; it is not possible to visualize what the observer saw. If the entire cornea was clouded, this may indicate a variety of things, including surface insensitivity so that the animal could not respond to particles in the air, and this may have caused the opacity. No test was made for sensitivity of the cornea. On the other hand, if the opacity was circumscribed to the iris area, this would suggest precipitation of lens proteins resulting in cataracts. In any event, sufficient FM 100 was absorbed following oral administration to produce ocular changes in male rats, which will have to be accounted for.

Although FM 100 appears to produce no serious acute effects during a 4-hour inhalation exposure and does not seem to cause fatality for 14 days thereafter, it would be desirable to observe lung tissue microscopically. The lung sections should include animals sacrificed shortly after exposure, 7 days after exposure, and 14 days after exposure.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

Current Production and Use

Hexabromocyclododecane is listed in the Directory of Chemical Producers, indicating that it is produced in commercial quantities of greater than 1,000 pounds per year. Hexabromocyclododecane is used as a fire retardant in copolymers of styrene with acrylonitrile, N-vinylpyrrolidine, divinylbenzene, methyl acrylate, poly(methyl methacrylate), or polyethylene. It is also used as a fire retardant in molded and foam thermoplastic polystyrenes and in polypropylene-based molding composition. When introduced into these plastics, hexabromocyclododecane imparts a self-extinguishing property to the material. The chemical is also used in the production of adhesives used for cementing polystyrene sheets. This use arises from its ability to reduce the molding time necessary for cellular polystyrene particles to form into a compact foam block.

Comments/Recommendations

FM 100 may be an environmentally persistent compound. Three other submissions have been received on this compound (8EHQ-0278-0051; 8EHQ-0378-0088; 8EHQ-0478-0137). FM 100 will be investigated as part of the ongoing Assessment Division study of flame retardant technology.

(a) This submission, like others, was deficient in a number of areas. The notifier should be asked to provide physical-chemical data on the test substance, gross findings on death, clinical observations, etc. The submitter should be also asked to support his contention that the information presented in this submission reasonably supports a conclusion of substantial risk.

(b) Section 8(b) data should be checked to determine the commercial significance of this compound; if production is sufficient, consideration should be given to CHIP and/or NIOSH/OSHA referral.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: June 23, 1978 (Revised May 10, 1979) Approved__________

SUBJECT: Status Report 8EHQ-0278-0066

Revision Needed __________

FROM: Joseph J. Merenda, Acting Director
Assessment Division, OTE/OTS (TS-792)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTE/OTS (TS-792)

Submission Description

Acute oral toxicity study with poly(dibromophenylene oxide) (MC935A) in rats. This notice was declassified on April 13, 1978.

Submission Evaluation

If this is a relatively high-molecular-weight polymer of brominated phenylene or brominated phenylene oxides, it is not necessarily as toxic as PBB. What is needed here is a good description of the material and the quantitative physical data that characterize it. The situation could be analogous to that which exists between vinyl chloride and polyvinyl chloride. In addition to information on the structure and molecular weight of the material, we should also be supplied with information about its purity, particularly from the standpoint of low-molecular-weight toxic residues that could be formed during the process of polymerization.

Current Production and Use

No production and use information was located; there is no entry in the TSCA Candidate List.

Comments/Recommendations

Several other submissions have dealt with this chemical (8EHQ-0378-0090; 8EHQ-0378-0103; 8EHQ-0498-0132). MC 935A may have some potential flame retardant uses; if so, it will be evaluated in the ongoing Assessment Division study of flame retardant technology.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

(a) Evaluate Section 8(b) data to determine present production level.

(b) Refer this submission and the others on this chemical to the PBB workgroup.

(c) If the chemical appears commercially viable, it should be given CHIP and/or OSHA/NIOSH consideration.

(d) Clarify structure with follow-up letter to notifier.

(e) Quantitative analytical data on MC 935A should be requested from the submitter; this should include a description of the compound actually tested as well as the commercial material, if different. Physical-chemical data would also be of value. The question of possible dioxin contamination of this material should also be raised with the submitter.

(f) The submitter should be asked to support his contention that the information presented in this submission reasonably supports a conclusion of substantial risk.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: June 14, 1978 (Revised April 6, 1979)

SUBJECT: Status Report 8EHQ-0278-0067 P

Approval WRM

Revision Needed ____________

Jm

FROM: Joseph J. Merenda, Acting Director
Assessment Division, OTE/OTS (TS-792)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTE/OTS (TS-792)

Submission Description

Corporate memo describing an employee accident involving exposure to diisopropylaminoethyl chloride hydrochloride. This notice was declassified on 5/22/78.

Submission Evaluation

Beta-chloroethylamines are used in the synthesis of various drugs that have antihistamine and beta-adrenergic receptor blocking properties. The diisopropylamino moiety suggests that beta-blockers are being synthesized. The hydrochloride salt was probably sufficiently irritating to produce conjunctivitis. The free base would also be irritating. Referral to OSHA and NIOSH is advised.

Current Production and Use

Although the chemical is not entered in the TSCA Candidate List, the 1975 Director of Chemical Producers lists one manufacturer. The chemical is reportedly used in organic synthesis, especially for the introduction of the beta-diisopropylaminoethyl radical.

Recommendations

Another submission referred to a similar chemical, dimethylaminoisopropyl chloride hydrochloride (8EHQ-0278-0073).

a) The submitter should be asked to provide a complete physician's report on this incident. This notice and any follow-up data should be referred to NIOSH and OSHA.

b) The submitter should be asked to support his contention that the information presented in this submission reasonably supports a conclusion of substantial risk.

***NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.**

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: May 10, 1978 (Revised May 10, 1979) Approved ___________

SUBJECT: Status Report 8EHQ-0278-0068

Revision
Needed ___________

FROM: Frank D. Kover, Acting Director
Assessment Division, OTS (TS-792)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTS (TS-792)

Submission Description

Addenda to and revisions of a previously submitted (8EHQ-1277-0023) toxicology study. The report involves a subacute dermal toxicity study of 2,3-dibromopropanol (DBP). This notice was declassified on April 13, 1978.

Submission Evaluation

2,3-Dibromopropanol has several potential toxicities: irritation of the skin and mucous membranes of the eyes and respiratory tract; liver; kidneys; and nervous system. In this dermal study, the tissue analyses show that the compound is absorbed through the skin and is picked up by fat, muscle, kidneys, and liver. The amount retained by these tissues appears to be dose related. The kidneys and muscle tissue are expected to have erratic levels of DBP and its metabolites as a function of the rate of excretion and the blood supply, respectively. Fat and, to some extent, the liver (which has much fat metabolism) tend to store compounds such as this and so the (total) bromine content would be more regular and constant over time. Values for blood and urine levels of the metabolites and the unchanged compound would have been useful but were not provided.

The urine studies are not complete because almost one-half of the rabbits had no urine samples. It is difficult to evaluate the slight increases in pH and the presence of cells in the urine of the dosed rabbits. The latter could be a reflection of kidney injury. Furthermore, while the changes in urinary specific gravity might not be significant, is it coincidental that the concentrating ability of the kidney tubules decreased in all of the treated animals? Or are we observing the effect of the alcohol (2,3-dibromopropanol or a dehalogenated metabolite) on the pituitary such that antidiuretic hormone is not being released and a more dilute urine is being excreted? It is not clear from the study whether we are observing this effect of the alcohol or the kidney tubule-damaging effect of the brominated alcohol.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

Current Production and Use

U.S. production of DBP is estimated at more than 10 million pounds in 1976. The major use is as an intermediate in the production of tris (2,3-dibromopropyl) phosphate and other flame retardants and as an active flame retardant itself. It is also used in the manufacture of insecticides and drugs. Recent actions by CPSC to regulate tris have likely depressed the domestic production and market for DBP.

Comments/Recommendations

DBP will be considered in the ongoing AD review of flame retardant technology. Pending the ultimate disposition of tris, DBP may or may not require additional examination. It is currently scheduled for examination in the AD's haloalkanols hazard assessment due in March 1979. One other submission has been received on this chemical (8EHQ-1277-0023).

(a) Production estimate should be confirmed with a check of the Section 8(b) data.

(b) DBP may be a CHIP candidate if production is sufficiently great.

(c) This information should be referred to OSHA and NIOSH for appropriate follow-up, if any.

(d) The submissions on DBP should be given to the contractor preparing the haloalkanols report for possible inclusion in that document. It may be worthwhile to ask the notifier for more complete data on these studies (full final report, analytical data, etc.).

(e) The submitter should be asked to support his contention that the information presented in this submission reasonably supports a conclusion of substantial risk.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: May 10, 1978

Approved ____________

SUBJECT: Status Report 8EHQ-0278-0069

Revision Needed ____________

FROM: Frank D. Kover, Acting Director
Assessment Division, OTS (TS-792)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTS (TS-792)

Submission Description

Addenda to and revisions of a previously submitted (8EHQ-1277-0024) toxicology study on the subacute dermal toxicity of 2,4,6-tribromophenol (TBP) in rabbits. The notice was declassifed on April 13, 1978.

Submission Evaluation

This is merely an addendum to a previous report and is confined to the urinalysis data from rabbits which received tribromophenol by skin application. Unfortunately, the data are very skimpy and really insufficient for an intelligent evaluation. From the data that are presented, based on the pH changes in the urine of treated animals and the changes in specific gravity, the suspicion arises that sufficient tribromophenol was absorbed to produce kidney damage.

Current Production and Use

No production figures are available for TBP; however, SRI's Directory of Chemical Producers lists three manufacturers, which implies an annual production in excess of 1,000 pounds. No information on uses was located.

Recommendations

Because this compound contains approximately 73% bromine, its potential for flame retardant use and PBB substitution should be evaluated. The AD will review this compound as part of its ongoing study of flame retardant technology.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

Several submissions have been received on this compound (8EHQ-1277-0024; 8EHQ-0178-0032; 8EHQ-0378-0095).

(a) EPA should be aware of the potential for dioxin contamination of this chemical. It may be prudent to ask the submitter exactly what steps are being taken to minimize or eliminate this problem; analytical "quality control" procedures should also be discussed.

(b) This submission and the others on TBP should be referred to the PBB workgroup.

(c) TBP should be given CHIP scrutiny by the Assessment Division.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: May 10, 1978

Approved ____________

SUBJECT: Status Report 8EHQ-0278-0070

Revision Needed ____________

FROM: Frank D. Kover, Acting Director
Assessment Division, OTS (TS-792)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTS (TS-792)

Submission Description

Acute inhalation toxicity of 1,2-dibromoethylacetate in rats. This notice was declassified on April 13, 1978.

Submission Evaluation

Unhydrolyzed esters tend to be pulmonary irritants and the bromine substituents would intensify the effect. This could account for the extremely high toxicity of the vapors. However, it would be useful to know how much 1,2-dibromoethylacetate, ethyldibromoacetate (and other similar contaminants), and free bromide are in the product. The possible bromoacetic acid metabolite of ethyldibromoacetate would be more toxic than the bromoethanol metabolite of 1,2- (or 1,1-) dibromoethylacetate.

The product produces pulmonary edema and congestion in a dose-related manner. High concentrations produce prompt death by direct effect on the lungs, bronchi, and possibly the respiratory centers in the brain. Lower concentrations produce delayed mortality probably by direct action on the lungs. A bromoethanol metabolite would probably be a liver and neurotoxin.

Current Production and Use

No production and use information was located; the chemical was not entered in the TSCA Candidate List.

Comments/Recommendations

Dibromoethylacetate may have some flame retardant applications; therefore, it will be evaluated as part of the ongoing Assessment Division study of

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NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

flame retardant technology. Two other submissions have been received on this chemical (8EHQ-0977-0005; 8EHQ-0478-0121).

Section 8(b) data should be checked for evidence of commercial production.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: June 22, 1978

Approved ___________

SUBJECT: Status Report 8EHQ-0278-0071

Revision
Needed ___________

FROM: Joseph J. Merenda, Acting Director
Assessment Division, OTE/OTS (TS-792)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTE OTS (TS-792)

Submission Description

Study of VC 948 (bis(tribromoneopentyl)pentaerythritol cyclic diphosphate) induced *in vitro* malignant transformation in mouse BALB/3T3 cells. The chemical is also known as MC 948. This notice was declassified on April 13, 1978.

Submission Evaluation

VC 948 produced significant dose-related increases in morphological transformations of BALB/3T3 cells under the conditions of the test. It is somewhat probable that this material may be shown carcinogenic if it is given further testing; nevertheless, the submitted report concludes that VC 948 has carcinogenic activity by virtue of its ability to morphologically alter BALB/3T3 cells. It should be noted that VC 948 is a phosphate ester of a sugar alcohol. Such compounds may alter intermediary metabolism of cells.

Current Production and Use

No production and use information was located; the chemical is not entered in the TSCA Candidate List.

Comments/Recommendations

VC 948 has been the subject of several other submissions (8EHQ-0278-0060; 8EHQ-0378-0092; 8EHQ-0378-0098; 8EHQ-0578-0145). The nomenclature provided is somewhat trivial; therefore, a follow-up to the notifier should ask for the preferred name and structure of this compound.

(a) 8(b) data should be checked to determine the commercial significance of this compound.

(b) This submission should be transmitted to NIOSH and OSHA.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: May 11, 1978 (Revised May 10, 1979) Approved__________

SUBJECT: Status Report 8EHQ-0278-0072

Revision Needed __________

FROM: Frank D. Kover, Acting Director
Assessment Division, OTS (TS-792)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTS (TS-792)

Submission Description

Acute toxicity studies of HCS-3510 [1-beta-beta-dimethoxyethyl-1-methyl-3-(5-t-butyl-1,3,4,-thiadiazol-2-yl) urea] in rats and rabbits. This notice was declassified on April 13, 1978.

Submission Evaluation

This compound (HCS-3510) appears to be related to the tertiary butyl thiadiazole urethanes or carbamates. However, it does not have the potential for significant anticholinesterase activity. Urea compounds with substitutes on the nitrogen atoms have central nervous system (CNS) effects. Phenylacetylurea is still used in the treatment of epilepsy, but only as a drug of last resort because of its toxicity.

The acute toxicity studies submitted for HCS-3510 show it to be an eye irritant. The studies do not eliminate the possibility of allergic sensitizing reactions. It appears as though the test substance was HCS-3510 dissolved in toluene and not the pure substance.

It is not clear what was dissolved in corn oil to determine the LD_{50}. Was it the solution in toluene or was it the pure solid compound? In all LD_{50} studies which employ solutions, it is customary to indicate the concentration of the pure compound per ml of solution. There is no indication of the HCS-3510 concentration in the solution that was used for determining the LD_{50}. Page 21 states that the test material was dissolved in corn oil. Pages 23, 25, and 26 give values for HCS-3510 in toluene. This should be cleared up. Without better data, it is impossible to tell whether the CNS depression was due to the compound or to the possibly administered toluene.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

Current Production and Use

No production and use information was located; it is not entered in the TSCA Candidate List.

Recommendations

Personal communication with the submitter indicates that this chemical is used solely as an intermediate in the production of an (as yet) unregistered pesticide.

(a) Section 8(b) data should be checked to determine the commercial significance of this chemical.

(b) The submitter should be contacted regarding clarification of the points raised in the evaluation section. It is essential for purposes of determining toxicity to obtain precise information on what was administered to the animals.

(c) The submitter should be asked to support his contention that the information presented in this submission reasonably supports a conclusion of substantial risk.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: May 8, 1978 (Revised May 10, 1979)

Approved ___________

SUBJECT: Status Report 8EHQ-0278-0073

Revision Needed ___________

FROM: Frank D. Kover, Acting Director
Assessment Division, OTS (TS-792)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTS (TS-792)

Submission Description

Ames-type mutagenicity evaluation of dimethylaminoisopropyl chloride hydrochloride (DMIC). This notice was declassified on April 13, 1978.

DMIC is chemically similar to diisopropylaminoethyl chloride hydrochloride, which is the subject compound in 8EHQ-0278-0067.

Submission Evaluation

DMIC is a base pair substitution mutagen that does not require activation.

N-dialkylaminoethyl and isopropyl halides are used chiefly to introduce side chains into drugs that affect adrenergic nerve terminals. For instance, DMIC introduced into a simple aromatic molecule such as catechol would produce a weak adrenalin-type drug. Introduced into a more complicated molecule such as benzhydryl, it would probably produce an antihistamine-like drug. Introduced into a phenothiazine molecule, it would produce either an antihistamine or major tranquilizer. Diisopropylaminoethyl introduced into an appropriate molecule such as naphthalene methyl ether would produce a compound that blocks β-adrenergic receptors from being activated by the stimuli that normally occur in the body.

The significance of mutagenicity of DMIC is not clear, particularly because of the low volume of production. Most β-adrenergic blockers that contain a diisopropylaminoethyl side chain produce tumors of the thymus in mice and have been denied acceptance in the U.S. by FDA. One of these, practolol, has been removed from the market in England because prolonged usage by patients resulted in changes of the cornea and in proliferation of the fibroblasts in the peritoneum. It is still to be determined whether this is a cancerous type of lesion.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

In some respects, the aminochloroalkanes are derivatives of N-mustards, which are known to produce chromosomal changes.

Current Production and Use

No production figures are available for DMIC; however, the SRI Directory of Chemical Producers lists one manufacturer, which implies an annual production in excess of 1,000 pounds. The chemical is apparently used in organic synthesis for the introduction of the dimethylaminoisopropyl radical.

Recommendations

(a) Production estimate should be confirmed with a check of the Section 8(b) data.

(b) If production is sufficient, DMIC should be given a CHIP examination; NIOSH/OSHA referral may also be indicated.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: June 22, 1978 (Revised May 10, 1979) Approved__________

SUBJECT: Status Report 8EHQ-0278-0074

Revision Needed ________

FROM: Joseph J. Merenda, Acting Director
Assessment Division, OTE/OTS (TS-792)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTE/OTS (TS-792)

Submission Description

Acute inhalation study of a mixture of brominated aromatic oils in rats. This notice was declassified on April 13, 1978.

Submission Evaluation

No toxic effects were observed after a 1-hour exposure to a nominal concentration of 2.29 mg/1. This is a calculated concentration, however, and does not represent a value actually measured in the breathing zone of the animals.

From the standpoint of toxicity, the test is unsatisfactory for the following reasons: the chemical nature of the volatiles is not characterized; the composition of the mixture is not specified, and therefore it is impossible to determine what the animals were exposed to by inhalation.

Current Production and Use

No information was found on the production or use of this material. The trade name, "Firemaster 680," implies that the material is used as a fire retardant.

Comments/Recommendations

This mixture may have some flame retardant application; therefore, it will be evaluated as part of the ongoing Assessment Division study of flame retardant technology.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

(a) The submitter should be asked to support his contention that this information reasonably supports the conclusion that FM 680 presents a substantial risk of injury to health or the environment.

(b) Section 8(b) data should be checked to determine commercial significance.

(c) This submission should be referred to the PBB workgroup.

(d) If the chemical appears commercially viable, it should be referred to NIOSH and OSHA for their information.

(e) Follow-up correspondence should be sent to the submitter requesting clarification as to the composition of the mixture that was actually tested.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: March 17, 1978 (Revised May 10, 1979)

SUBJECT: Status Report 8EHQ-0278-0075P

FROM: Frank D. Kover, Supervisor
Hazard Assessment Group, OTS (WH-557)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTS (TS-788)

Submission Description

Unspecified chemicals injured an employee as the result of a ruptured (overloaded) safety disc on process filter.

Submission Evaluation

None possible without identity of possible material of exposure.

Current Production and Use

No estimate possible.

Recommendations

Additional information on the causative agent(s) should be developed via follow-up correspondence; referral to NIOSH and OSHA should be made for appropriate follow-up, if any.

The submitter should be asked to support his contention that the information presented in this submission reasonably supports a conclusion of substantial risk.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

EPA FORM 1320-6 (REV. 3-76)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: March 17, 1978 (Revised May 10, 1979)

SUBJECT: Status Report 8EHQ-0278-0076P

FROM: Frank D. Kover, Supervisor
Hazard Assessment Group, OTS (WH-557)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTS (TS-788)

Submission Description

Management prepared industrial accident report on an incident involving accidental exposure to phosgene.

Submission Evaluation

Phosgene is highly toxic and can produce serious lung problems.

Current Production and Use

Almost 800 million pounds of phosgene were produced in 1975, principally for use in manufacture of isocyanate, polyurethane, and polycarbonate resins. Other uses include production of pesticides, herbicides, dyes, organic carbonates, and chloroformates.

Recommendations

Personal data have been deleted. Referral should be made to NIOSH and OSHA for appropriate follow-up, if any.

The submitter should be asked to support his contention that the information presented in this submission reasonably supports a conclusion of substantial risk.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: MAR 17 1978

SUBJECT: Status Report 8EHQ-0278-0077P

Approved __________

Revision Needed __________

FROM: Frank D. Kover, Supervisor
Hazard Assessment Group, OTS (WH-557)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTS (TS-788)

Submission Description

Internal company correspondence concerning eye irritation and other responses to dicyclopentadiene (DCPD) and DCPD alcohol during production of the latter.

Toxicological Evaluation

Dicyclopentadiene alcohol is an unsaturated alcohol with an allyl configuration. Such compounds tend to irritate the mucous membranes of the eye and respiratory tract. This would account for the symptoms of the exposed workers. More serious toxicity could be expected if some of the alcohol became oxidized to the aldehyde. The resulting compounds would be in the acrolein class.

Current Production and Use

Dicyclopentadiene is used as a chemical intermediate in the production of insecticides, ethylene/propylene/diene/monomer (EPDM) elastomers, metallocenes, paints and varnishes, and flame retardants for plastics. Over 77 million lbs. (includes cyclopentadiene) were produced in 1975.

Recommendations

Several submissions have been received on these compounds. Follow-up correspondence should obtain the structural formula of DCPD alcohol and further information on the exposure incident and any medical examinations. DCPD is scheduled for preliminary assessment treatment in the near future. DCPD alcohol should be considered a candidate for Sec. 8(a) and early warning activities. This submission and related ones from this plant should be referred to NIOSH and OSHA for appropriate follow-up; a note outlining the number of incidents at this plant should be included.

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*NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

The submitter should be asked to support his contention that the information presented in this submission reasonably supports a conclusion of substantial risk.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: March 17, 1978 (Revised May 10, 1979)

SUBJECT: Status Report 8EHQ-0278-0078P

FROM: Frank D. Kover, Supervisor
Hazard Assessment Group, OTS (WH-557)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTS (TS-788)

Submission Description

Management prepared accident report of accidental exposure to phosphorus oxychloride as a result of defective equipment.

Submission Evaluation

The toxic effects of phosphorus oxychloride are well known.

Current Production and Use

Over 30 million pounds of phosphorus oxychloride were produced in 1976. Reported uses are many and include: manufacture of phosphate esters for plasticizers, gasoline additives, hydraulic fluids, and organophosphorus compounds; chlorinating agent and catalyst; dopant for semiconductor-grade silicon; tricresyl phosphate and flame retardants.

Recommendations

Personal data have been deleted. Referral should be made to NIOSH and OSHA for appropriate follow-up, if any.

The submitter should be asked to support his contention that the information presented in this submission reasonably supports a conclusion of substantial risk.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: March 17, 1978 (Revised May 10, 1979)

SUBJECT: Status Report 8EHQ-0278-0079P

FROM: Frank D. Kover, Supervisor
Hazard Assessment Group, OTS (WH-557)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTS (TS-788)

Submission Description

Management prepared industrial accident reports of incidents involving accidental exposures to phosgene/toluene vapors.

Submission Evaluation

Phosgene is highly toxic and can produce serious lung problems.

Current Production and Use

Almost 800 million pounds of phosgene were produced in 1975, with most used captively in the manufacture of isocyanate, polyurethane, and polycarbonate resins. Other uses include the production of carbamates, organic carbonates and chloroformates, pesticides, herbicides, and dyes.

Over 5 billion pounds of toluene were produced in 1975 for use as a solvent, chemical intermediate, aviation gasoline component, and high-octane blending stock.

Recommendations

Referral should be made to NIOSH and OSHA for appropriate action, if any. Personal data have been deleted.

The submitter should be asked to support his contention that the information presented in this submission reasonably supports a conclusion of substantial risk.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: March 17, 1978 (Revised May 10, 1979)

SUBJECT: Status Report 8EHQ-0278-0080P

FROM: Frank D. Kover, Supervisor
Hazard Assessment Group, OTS (WH-557)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTS (TS-788)

Submission Description

Industrial accident report of incident involving release of phosphorus oxychloride fumes causing eye irritation in an employee.

Submission Evaluation

The toxic effects of phosphorus oxychloride are well known.

Current Production and Use

Over 30 million pounds of phosphorus oxychloride were produced in 1976. Reported uses are many and include: manufacture of phosphate esters for plasticizers, gasoline additives, hydraulic fluids, and organophosphorus compounds; chlorinating agent and catalyst; dopant for semiconductor-grade silicon; tricresyl phosphate and flame retardants.

Recommendations

Personal data have been deleted. Referral should be made to NIOSH and OSHA for appropriate follow-up, if any.

The submitter should be asked to support his contention that the information presented in this submission reasonably supports a conclusion of substantial risk.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: March 17, 1978 (Revised May 10, 1979)

SUBJECT: Status Report 8EHQ-0278-0081P

FROM: Frank D. Kover, Supervisor
Hazard Assessment Group, OTS (WH-557)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTS (TS-788)

Submission Description

A chemical company maintenance man developed a rash on the lower leg from an unspecified cause.

Submission Evaluation

None possible.

Current Production and Use

No estimates possible.

Recommendations

Personal data have been deleted. Follow-up correspondence should determine if more information on the causative agent(s) is available. Referral should be made to NIOSH and OSHA for appropriate action, if any.

The submitter should be asked to support his contention that the information presented in this submission reasonably supports a conclusion of substantial risk.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: March 17, 1978 (Revised May 10, 1979)

SUBJECT: Status Report 8EHQ-0278-0082

FROM: Frank D. Kover, Supervisor
Hazard Assessment Group, OTS (WH-557)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTS (TS-788)

Submission Description

Preliminary report of a mutagenesis study of diesel fuel.

Submission Evaluation

This notification is acceptable if the analytical composition of the fuel is adequately characterized in the final report (i.e., does it contain a carcinogenic metal, such as nickel, or polynuclear aromatic hydrocarbons, and if so, which ones and in what ratios).

While the clastogenic (broken chromosomes) effects observed in this study are not transmissible, they could, nevertheless, be a serious impediment to the fertility of a person whose sperm have such breaks.

Current Production and Use

Exact production figures are not available; however, over 1 billion barrels of diesel fuel were produced in 1975. It is used as fuel for trucks, ships, machinery, etc.; in drilling muds; and in mosquito control.

Recommendations

No activity necessary until final results are available for evaluation.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: December 4, 1978

SUBJECT: Status Report 8EHQ-0678-0082
Supplement

Approved ______________

Revision
Needed ______________

FROM: Frank D. Kover
Assessment Division, OTE/OTS

TO: Joseph J. Merenda, Director
Assessment Division, OTE/OTS

Submission Description

Final results of a mutagenesis study on diesel fuel. The preliminary results were received in February 1978 (8EHQ-0278-0082).

Submission Evaluation

Diesel fuel was assayed for mutagenicity in the Ames test (bacteria), mitotic gene conversion in yeast, mouse lymphoma forward mutation assay, and *in vivo* rat bone marrow cytogenetic analysis.

The performing laboratory concludes that the microbial tests (yeast and bacteria) were negative for mutagenicity. The data support this interpretation. On pp. 14 and 15 of the report, diesel fuel concentrations are referred to by a coded sequence (NA1, NA2, ...); a more desirable approach would be to state the test concentrations as such in the tables.

The performing laboratory states that the mouse lymphoma assay was negative; the results, however, do not suggest this interpretation. In the nonactivation test, there is a positive dose response with increasing concentrations that approaches a mutation frequency almost 15 times that observed with the solvent control (see table on p. 43). The data from the activation test are equivocal, but there appears to be some increase over the control values at higher diesel fuel concentrations. The term "negative control" should be defined by the submitter.

The performing laboratory concludes that diesel fuel is clastogenic (causes chromosome breaks) in the rat bone marrow cytogenetic test; the results support this interpretation. The submitter should, however, offer some discussion as to the cause of the variability observed in the number of cells with one or more chromosome aberrations within each dose group for the rats sacrificed at 6, 24, and 48 hours postexposure (see p. 51). Are these effects due to chromosome repair, cell death, or some

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***NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.**

other cause? The data summary given on p. 45 results from the averaging of test values for different kill times within each dose group. Due to the variability in the data and the different interpretations that might be placed on the results from each sacrifice time, this is not a valid procedure.

Production and Use

Exact production figures are not available; however, over 1 billion barrels of diesel fuel were produced in 1975. It is used as a fuel for trucks, ships, machinery, etc.; in drilling muds; and in mosquito control.

Comments/Recommendations

Given the large annual production of diesel fuel and the potential for widespread exposure, the mutagenic and carcinogenic potential of diesel fuel (and its combustion products) should be examined further.

(1) This report should be transmitted to OSHA, NIOSH, OAQPS, OWHM, OSW, MSAPC, and ORD.

(2) The submitter should be asked to provide the following:

- (a) Analytical characterization of the diesel fuel tested in this report. Of particular interest would be the identification and quantification of any carcinogenic metals or polynuclear aromatic hydrocarbons.
- (b) The placement of footnote "d" on p. 51 and footnotes "b" and "c" on p. 53.
- (c) A description of the submitter's planned further testing of diesel fuel, especially with respect to mutagenicity, carcinogenicity, and chronic effects.
- (d) All other information needs contained in the evaluation section above.

Additional Comments on the Parent Submission 8EHQ-0278-0082

The following comments deal with specific sections (as noted) of the Preliminary Report received in February 1978.

Item 1 This paragraph states that the observed chromosomal effects are somatic rather than germinal and thus implies that because these changes are not viewed as heritable, there is little or no germinal risk. This is not a supportable conclusion because the observed chromosome damage may represent only the most obvious point mutation effects. In addition, because these data are similar to those seen in benzene mutagenicity battery tests, there is concern that diesel fuel may be carcinogenic.

Item 2a While intraperitoneal injections do not represent an environmentally significant route of exposure, the crucial issue in the rat bone marrow study concerns the entry of the test material into the bone marrow and the effects of the resultant exposure on the rapidly dividing cells found there. If a chemical can be absorbed through the peritoneum and affect the bone marrow, perhaps it can likewise be absorbed through the lung following inhalation. Unless the lung can be shown to completely detoxify diesel fuel, the results should stand. Nevertheless, the results of a percutaneous rat bone marrow assay would be of great interest.

Item 2b The observation concerning the suppression of the mitotic index in the rat bone marrow study is not borne out by the data.

Item 2c The applicability of cytogenetic test procedures to hydrocarbon mixtures is not necessarily an issue. If the material breaks chromosomes, it breaks chromosomes.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: March 17, 1978

Approved ______________

SUBJECT: Status Report 8EHQ-0278-0083

Revision Needed ______________

FROM: Frank D. Kover, Supervisor
Hazard Assessment Group, OTS (WH-557)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTS (TS-788)

Submission Description

Report of interim results on a skin-painting carcinogenesis study in mice with crude shale oils indicating tumorigenic activity in the skin.

Submission Evaluation

It is not surprising that these crude oils are carcinogenic in the skin of mice. Probably all fossil-derived oils contain sufficient polynuclear aromatic hydrocarbons to be carcinogenic.

Current Production and Use

No commercial distribution at present. Recovery of oil from oil shale is a growing technology as the result of the energy situation in the U.S. No firm production figures are available at this time.

Recommendations

These would not likely be on the inventory and may have to be addressed eventually under Section 5.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: March 17, 1978

SUBJECT: Status Report 8EHQ-0378-0084

Approved ____________

Revision Needed ____________

FROM: Frank D. Kover, Supervisor
Hazard Assessment Group, OTS (WH-557)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTS (TS-788)

This submission was phoned in by the TSCA Regional Coordinator for Region X to report a hazardous spill of phenol-formaldehyde resin and diphenylmethane diisocyanate. The next day (March 8, 1978), the submitter was contacted concerning the spill in Region X and informed my group that he considered the spill report to be under Section 311 of the FWPCA and not Section 8(e) of TSCA. Therefore, he asked that we withdraw the notice.

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*NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: May 1, 1978 (Revised May 10, 1979)

Approved ____________

SUBJECT: Status Report 8EHQ-0378-0085

Revision Needed ____________

FROM: Frank D. Kover, Acting Director
Assessment Division, OTS (TS-792)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTS (TS-792)

Submission Description

Results of the analysis of an industrial production site for dioxins. This notice was declassified on April 13, 1978.

Submission Evaluation

Measurable quantities of 2,3,7,8-tetrachlorodibenzo-p-dioxin have been found at two sites in the plant sampled. Dioxins are extremely toxic and persistent compounds.

Current Production and Use

There is no current production of dioxins in the world; the compounds can occur as contaminants in (and during the production of) certain chemicals.

Recommendations

The sampling results should be forwarded to NIOSH and OSHA for appropriate follow-up.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: March 28, 1978 (Revised May 10, 1979)

Approved ______________

SUBJECT: Status Report 8EHQ-378-0086

Revision Needed ______________

FROM: Frank D. Kover, Acting Director
Assessment Division, OTS (WH-557)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTS (TS-788)

Submission Description

Internal company correspondence regarding employee reaction observed following exposure to FM-680 [1,2-bis(2,4,6-tribromophenoxy)ethane].

Submission Evaluation

The dermatitis and swelling of the skin could have been due to Firemaster 680. We are not familiar with any animal and human skin testing studies that absolve this chemical from skin sensitization possibilities.

Current Production and Use

Not listed in the TSCA Candidate List; probably used as flame retardant.

Recommendations

This chemical will be addressed in Hazard Assessment Group as part of our technology assessment of flame retardants; a request for Section 8(a) information may be appropriate. Referral should be made to NIOSH and OSHA for follow-up as needed.

The submitter should be asked to support his contention that the information presented in this submission reasonably supports a conclusion of substantial risk.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: June 14, 1978 (Revised May 10, 1979) Approved ________

SUBJECT: Status Report 8EHQ-0378-0087

Revision Needed ________

FROM: Joseph J. Merenda, Acting Director
Assessment Division, OTE/OTS (TS-792)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTE/OTS (TS-792)

Submission Description

Results of acute toxicity studies of the isocyanate dimer of 5-t-butyl-1,3,4-thiadiazol-2-yl in rabbits and rats. This notice was declassified on April 13, 1978.

Submission Evaluation

The structural formula suggests that there is a resemblance to physostigmine by virtue of both being urethanes attached to polycyclic hetero rings. The acute toxicity data submitted demonstrate that the compound is a primary eye irritant and is most likely free from skin irritation. The latter does not indicate that the compound is free from sensitizing properties. The substance is poorly absorbed from the skin and gastrointestinal tract. This compound contains tertiary butyl groups which often play the same role as quaternary ammonium groups in organic molecules. For instance, quaternary ammonium compounds such as acetylcholine which are highly active by subcutaneous and intravenous injection have practically no activity when swallowed or when applied to the skin. The quaternary ammonium residue has great difficulty in penetrating certain membranes. The manufacturer should supply us with information about the possible anticholinesterase activity of this compound.

Current Production and Use

No information was located on production and use; not contained in the TSCA Candidate List. According to a personal communication with the submitter, the chemical is an intermediate for the production of an as yet unregistered pesticide.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

Comments/Recommendations

This chemical has abuse potential; much more information should be required before commercial production begins.

(a) Section 8(b) data should be checked for evidence of commercial significance.

(b) The submission will be referred to OPP with a request that they check their files for additional data. Registration status of the final product (identity unknown at this time) should also be checked.

(c) The notifier should be asked to provide physical-chemical data on the chemical as well as the preferred chemical name, CAS number, and a structural drawing; the question on anticholinesterase activity should also be addressed.

(d) Once again, the page containing a description of the evaluation method is missing; a request for same should be made.

(e) The submitter should be asked to support his contention that the information presented in this submission reasonably supports a conclusion of substantial risk.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: May 10, 1978 (Revised May 10, 1979) Approved__________

SUBJECT: Status Report 8EHQ-0278-0088

Revision
Needed __________

FROM: Frank D. Kover, Acting Director
Assessment Division, OTS (TS-792)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTS (TS-792)

Submission Description

Results of acute toxicity studies of a residue of hexabromocyclododecane (FM 100) in rats and rabbits. This notice was declassified on April 13, 1978.

Submission Evaluation

It is not clear what "FM 100 residue" is. The basic compound appears to be a saturated ring system of 12 carbon atoms, 6 of which contain bromine. It would be surprising if this compound is readily flammable; nonetheless, the submission reports that the residue was a "flammable liquid." Therefore, the residue might be a mixture containing an organic solvent that burns readily, although this is not clear. Hexabromocyclododecane should be an irritant with tissue storage properties similar to those of PBB's. It would therefore be of interest to find out something about the biodegradability of this compound and its capacity for storage in fat depots. The important thing here is (1) what was tested, (2) did the material tested contain significant amounts of the hexabromo compound, and (3) are there toxicity data for the hexabromo compound.

Current Production and Use

Hexabromocyclododecane is apparently used as a flame retardant. No additional information on production was located, nor is FM 100 entered in the TSCA Candidate List. FM 100 is listed in the "Bromine Based Fire Retardants" report, and its fire retardant applications include ABS, polymethylmethacrylate, polypropylene, and polystyrene polymers.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

Comments/Recommendations

FM 100 is the subject of two earlier submissions (8EHQ-0278-0051 and 8EHQ-0278-0065). The chemical will be evaluated as part of the ongoing Assessment Division examination of flame retardant technology. FM 100 may be an environmentally persistent compound.

(a) This submission, like others, was deficient in a number of areas. The notifier should be asked to provide physical-chemical data on the test substance, gross findings on death, clinical observations, etc., as well as answers to the questions raised in the evaluation section.

(b) Section 8(b) data should be checked to determine the commercial significance of this compound; if production is sufficient, consideration should be given to CHIP and/or NIOSH/OSHA referral.

(c) A specific request for p. 17 should be made (this was not included in the submission).

(d) The submitter should be asked to support his contention that the information presented in this submission reasonably supports a conclusion of substantial risk.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: March 21, 1978 (Revised May 10, 1979)

Approved____________

SUBJECT: Status Report 8EHQ-0378-0089

Revision Needed ____________

FROM: Frank D. Kover, Supervisor
Hazard Assessment Group, OTS (WH-577)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTS (TS-788)

Submission Description

Journal article on analysis of chlorinated norbornene derivatives.

Submission Evaluation

Not needed.

Current Production and Use

Used in the production of chlorinated pesticides, e.g., endrin.

Recommendations

This submission would not be required under proposed guidance. The submitter should be asked to support his contention that the information presented in this submission reasonably supports a conclusion of substantial risk.

NOTE: This status report is the result of a preliminary staff evaluation of information to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: June 20, 1978

Approved ____________

SUBJECT: Status Report 8EHQ-0378-0090

Revision Needed ____________

FROM: Joseph J. Merenda, Acting Director
Assessment Division, OTE/OTS (TS-792)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTE/OTS (TS-792)

Submission Description

Acute oral toxicity study of MC-935A [poly(dibromophenylene oxide)] in mice. (MC-935A is also known as VCC-935A). This notice was declassified on April 13, 1978.

Submission Evaluation

The experimental protocol did not produce an LD_{50} value. In addition, none of the animals were sacrificed to determine if there were any gross effects. Information as to the blood levels, half-life, metabolism, fecal excretion, and polymer size (MW) of this compound must be provided before any statement as to the potential effects of MC-935A can be made.

The compound MC-935A appears to be a polymer. If the molecular weight is high, very little acute toxicity is to be expected unless there is a high percentage of impurities including monomers and low-molecular-weight polymers. What should be done in this case is to administer the compound, collect the feces, and, after killing the animals, remove the intestinal tract and determine the amount of material present in the feces and in the intestinal tract. This will give a pretty good indication of whether absorption has occurred. This is at the present time not customary practice. If the LD_{50} exceeds 10 grams per kilo, nothing further is usually done. Some investigators examine the visceral organs grossly as well as microscopically, in order to determine whether any effect has occurred.

Current Production and Use

No production and use information was located; no entry in the TSCA Candidate List.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

Comments/Recommendations

Several other submissions have been received on MC-935A (8EHQ-0278-0066; 8EHQ-0378-0103; 8EHQ-0478-0132). The chemical may have some flame retardant applications; if so, it will be evaluated as part of the ongoing Assessment Division study of flame retardant technology.

(a) Section 8(b) data should be checked to determine commercial significance.

(b) This submission and others on MC-935A should be referred to the PBB workgroup.

(c) The submitter should be asked to support his contention that information contained in this notice is indicative of a substantial risk to health or the environment. The report in its present form offers no information to indicate that MC-935A represents a substantial risk.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: June 22, 1978 (Revised May 10, 1979)

Approved ____________

SUBJECT: Status Report 8EHQ-0378-0091

Revision Needed ____________

FROM: Joseph J. Merenda, Acting Director
Assessment Division, OTE/OTS (TS-792)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTE/OTS (TS-792)

Submission Description

Results of acute toxicity studies of MC-933 [bis(2,3-dibromopropyl)ether] in rabbits and rats. This notice was declassified on April 13, 1978.

Submission Evaluation

Although bis(2,3-dibromopropyl)ether does not appear to have high acute toxicity, sufficient amounts were absorbed from the skin application to cause signs of irritation as evidenced by lachrymation and discharge of pus from the nose. The ether belongs to the same class of compounds as dichlorodimethyl ether, although it is apparently far less noxious.

The diarrhea observed in all the rats receiving MC-933 in corn oil by stomach tube also suggests slight irritant properties. The inhalation studies in rats also indicate the possibility of mild irritant action.

Autopsies should have been carried out on the organs of all the rats and rabbits receiving MC-933. This type of halogenated compound usually does not produce marked acute pathological changes. It would be necessary to know whether the kidney, liver, and other internal viscera were at all affected by the small amounts of compound that could have been absorbed. The respiratory tract and lungs should be examined in the rats exposed to the dust and the rabbits to whose skin MC-933 was applied in order to determine whether the lachrymation and nasal discharge have toxicological significance. If this compound is absorbed, it will probably be stored in fat depots. Information should be supplied about the ease with which liver enzymes and bacterial enzymes degrade this compound.

Current Production and Use

No information on the current production and use of this material was located; it was not entered in the TSCA Candidate List.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

Comments/Recommendations

This material may have potential for flame retardant applications; therefore, it will be evaluated as part of the ongoing Assessment Division investigation of flame retardant technology.

(a) Section 8(b) data should be examined for evidence of commercial significance.

(b) Additional information on the study should be requested from the submitter. Of particular interest are the results of any gross or histopathological examinations conducted on the exposed animals. The submitter should also be asked to support his contention that this information reasonably supports the conclusion that MC-933 presents a substantial risk of injury to health or the environment.

(c) In the event that MC-933 appears commercially viable, it should be given CHIP and/or NIOSH/OSHA consideration.

(d) Pages 17 and 19 of the rabbit and rat acute toxicity study (February 8, 1978) are missing.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: May 10, 1978 (Revised May 10, 1979)

Approved ____________

SUBJECT: Status Report 8EHQ-0378-0092

Revision Needed ____________

FROM: Frank D. Kover, Acting Director
Assessment Division, OTS (TS-792)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTS (TS-792)

Submission Description

Results of an acute oral toxicity study of MC 948 [bis(tribromoneopentyl) pentaerythritol cyclic diphosphate] in mice. This notice was declassified on April 13, 1978.

Submission Evaluation

This compound has potential for affecting nerve sheaths and inhibiting cholinesterase. While the acute oral toxicity is low, the study fails to consider the potential for neurologic problems. How much was really absorbed and how much passed through into the feces? Were the animals observed for paralysis or other neuromuscular effects?

Current Production and Use

No information is available on the production and use of MC 948, nor is it entered in the TSCA Candidate List.

Recommendations/Comments

Request a full copy of the study from the submitter as a page is missing; also obtain the chemical structure and available use information from the submitter. Use information will likely dictate the extent of OTS involvement with this chemical. Several submissions have been received on this compound (8EHQ-0278-0060; 8EHQ-0278-0071; 8EHQ-0378-0098).

(a) Check Section 8(b) data for evidence of commercial significance.

(b) If use data give evidence of exposure, MC 948 should be considered for CHIP and/or NIOSH/OSHA referral.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

(c) Additional information on the study (especially the questions raised in the evaluation section) should be requested from the submitter for inclusion in OTS files.

(d) The submitter should be asked to support his contention that the information presented in this submission reasonably supports a conclusion of substantial risk.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: March 17, 1978 (Revised May 10, 1979)

SUBJECT: Status Report 8EHQ-0378-0093

FROM: Frank D. Kover, Supervisor
Hazard Assessment Group, OTS (WH-557)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTS (TS-788)

Submission Description

Journal article on GC determination of chlordene epoxide.

Submission Evaluation

Chlordene epoxide is a metabolite of the pesticide chlordene.

Current Production and Use

No information available.

Recommendations

Inappropriate submission. The submitter should be asked to support his contention that the information presented in this submission reasonably supports a conclusion of substantial risk.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration that it may be based on incomplete information.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: June 23, 1978 (Revised May 10, 1979)

SUBJECT: Status Report 8EHQ-0378-0094

FROM: Joseph J. Merenda, Acting Director
Assessment Division, OTE/OTS (TS-792)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTE/OTS (TS-792)

Approved ____________

Revision
Needed ____________

Submission Description

Results of two studies on chlorendic anhydride (CA): an acute oral study in mice and an *in vitro* malignant transformation study in BALB/3T3 cells. This notice was declassified on April 13, 1978.

Submission Evaluation

The BALB/3T3 mouse lymphoma assay produced equivocal results. In order to obtain results which can be adequately evaluated, it would be necessary to employ doses linearly spaced around 0.1 mg/ml, which is the dose at which significant transformation occurred. The test should be repeated using: more sets of negative controls; another transformation system in addition to the present one; and if activation by the S-9 liver fraction can be utilized, it should also be included in the battery.

The reported oral LD_{50} was 4,169 mg/kg in male mice and 2,884 mg/kg in females. The study was deficient in the following ways: total volume of material administered by gavage is close to the amount which causes physical stress; no gross or histopathology was performed; insufficient numbers of animals were employed in the intermediate mortality groups to obtain good LD_{50} values and dose-response curves.

The fact that chlorendic anhydride is a potent acylating agent suggests that it may be appropriate to further define its biological activity with other short-term tests. Consideration should also be given to its potential for irritant and sensitization effects.

Current Production and Use

An estimated 10 million pounds of chlorendic anhydride/chlorendic acid were produced in 1974, with an expected annual growth rate of 10% through

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NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

1980. Reported uses of the anhydride include: flame-resistant polyester resins; hardening agent for epoxy resins; chemical intermediate; source of chlorendic acid.

Comments/Recommendations

Several other submissions have been received on chlorendic anhydride (8EHQ-0278-0058; 8EHQ-0278-0059; 8EHQ-0378-0101; 8EHQ-0478-0127; 8EHQ-0478-0134).

(a) A CHIP report should be prepared on CA. It may be necessary to use Section 8(d) to generate sufficient data as the scientific literature apparently contains little information.

(b) The comments contained in the evaluation section should be transmitted to the submitter.

(c) The submitter should be asked to support his contention that the information presented in this submission reasonably supports a conclusion of substantial risk.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: June 28, 1978 (Revised May 10, 1979)

Approved ___________

SUBJECT: Status Report 8EHQ-0378-0095

Revision
Needed ___________

FROM: Joseph J. Merenda, Acting Director
Assessment Division, OTE/OTS (TS-792)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTE/OTS (TS-792)

Submission Description

Results of a pilot teratology study of tribromophenol in rats. This notice was declassified on April 13, 1978.

Submission Evaluation

It would be useful to know the degree of purity of the tribromophenol that was tested.

Since this study did not rule out teratogenic effects with certainty, a further investigation using larger numbers of animals per group is in order. Although the investigator does not consider the effects observed in one animal of five receiving 10 mg/kg/day to be dose related, this is only his surmise.

Current Production and Use

No production figures are available for this chemical; however, the Directory of Chemical Producers lists three manufacturers, which implies an annual production in excess of 1,000 pounds. No information on uses is available, although the material may have some flame retardant applications.

Comments/Recommendations

Several other submissions have been received on this chemical (8EHQ-1277-0024; 8EHQ-0178-0032; 8EHQ-0278-0069). The Assessment Division will review this compound as part of its ongoing study of flame retardant technology.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

(a) The submitter should be asked to clarify which tribromophenol isomer this notice refers to.

(b) EPA should be aware of the potential for dioxin contamination of this chemical. It may be prudent to ask the submitter exactly what steps are being taken to minimize or eliminate this problem; analytical "quality control" procedures should also be discussed.

(c) This submission and others on tribromophenol should be referred to the PBB workgroup for consideration in their brominated flame retardants work.

(d) Section 8(b) data should be checked to determine annual production.

(e) The submitter should be asked to support his contention that the information presented in this submission reasonably supports a conclusion of substantial risk.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: March 30, 1978

SUBJECT: Status Report 8EHQ-0378-0096

FROM: Frank D. Kover, Supervisor
Hazard Assessment Group, OTS (WH-557)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTS (TS-788)

Submission Description

An industry-sponsored statistical study attempts to refute conclusions set forth in an unavailable draft doctoral thesis on cancer in chromate production workers.

Submission Evaluation

The submitter's attempt to demonstrate the low carcinogenic potential of chromates (by refuting an earlier epidemiological study) does not support consideration of the submission as an 8(e) substantial risk notice.

Current Production and Use

Chromium and chromates enjoy large-volume production and have a multitude of uses.

Recommendations

The thesis concerns occupational exposure; therefore, referral to NIOSH and OSHA appears appropriate.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: March 28, 1978 (Revised May 10, 1979)

SUBJECT: Status Report 8EHQ-0378-0097

FROM: Frank D. Kover, Acting Director
Assessment Division, OTS (WH-557)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTS (TS-788)

Submission Description

Internal company correspondence concerning eye irritation and other responses to dicyclopentadiene (DCPD) and DCPD alcohol during production of the latter.

Submission Evaluation

This submission reports additional cases of exposure to dicyclopentadiene (DCPD) and DCPD alcohol. An earlier submission (8EHQ-0278-0077P) reported similar problems with these compounds. The exact chemical structure of DCPD alcohol is uncertain; nonetheless, these compounds appear to have irritation potential for the upper respiratory tract. If DCPD alcohol is an unsaturated alcohol with an allyl configuration, this would account for the observed symptoms.

Current Production and Use

Dicyclopentadiene is used as a chemical intermediate in the production of insecticides, ethylene/propylene/diene/monomer (EPDM) elastomers, metallocenes, paints and varnishes, and flame retardants for plastics. Over 77 million pounds (includes cyclopentadiene) were produced in 1975.

Recommendations

Personal data have been deleted. The submitter reports that they are currently overtaxing the DCPD alcohol production facility and plan to continue doing so for at least the next year. A follow-up by NIOSH and OSHA appears in order. Annual production of DCPD alcohol will be checked when Section 8(b) data become available; DCPD alcohol may be a CHIP

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

candidate. A preliminary assessment of DCPD is currently scheduled for the near future.

The submitter should be asked to support his contention that the information presented in this submission reasonably supports a conclusion of substantial risk.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: March 30, 1978 (Revised May 10, 1979)

SUBJECT: Status Report 8EHQ-0378-0098

FROM: Frank D. Kover, Supervisor
Hazard Assessment Group, OTS (WH-557)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTS (TS-788)

Submission Description

Study describing the in vitro malignant transformation effects of VC-948 [bis(tribromoneopentyl)pentaerythritol cyclic diphosphate] in BALB/3T3 cells.

Submission Evaluation

This compound appears to be a pyrophosphate which probably hydrolyzes promptly to a phosphoric ester containing six bromine atoms. The potential for delayed neurotoxicity, liver injury, and carcinogenicity can be surmised. The submitted report reinforces the latter potential.

Current Production and Use

No production and use information was located; chemical is on the TSCA Candidate List.

Recommendations

The submitter should be contacted concerning the actual structure of VC-948 (available chemical name is trivial). Apparent low production does not support continued EPA activity; nonetheless, a number of submissions have concerned this chemical, and it may be a candidate for Section 8(a), CHIP, or NIOSH/OSHA consideration.

The submitter should be asked to support his contention that the information presented in this submission reasonably supports a conclusion of substantial risk.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: June 26, 1978

Approved ____________

SUBJECT: Status Report 8EHQ-0378-0099

Revision
Needed ____________

FROM: Joseph J. Merenda, Acting Director
Assessment Division, OTE/OTS (TS-792)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTE/OTS (TS-792)

Submission Description

Report confirming the presence of various chlorinated hydrocarbons (chlordene, octachlorocyclopentene, hex BCH, etc.) in catfish and carp taken from the Mississippi River. This information is supplemental to that contained in 8EHQ-1177-0013 and 8EHQ-0278-0054. This notice was declassified on May 1, 1978.

Submission Evaluation

These three related reports have a common difficulty in that the chemical nomenclature is inadequate and thus the identity of the compounds remains obscure.

The report fails to note which tissues were analyzed, the number of fish in the sample, or the type of fish used in each residue measurement. Several of the samples had high (>1 ppm) concentrations of hex BCH and hex vinyl chloride as reported previously in 8EHQ-1177-0013; in addition, one of the six samples had concentrations of chlordene, isodrin, and octachlorocyclopentene at or above 1 ppm.

The submission also offers a comparison of two analytical methods used for residue determination, GCMS and ECGC. The techniques appear to yield comparable results, but no indication of the variation (precision, accuracy) of either method was given.

Current Production and Use

All of the compounds listed in the submission are pesticides or pesticide intermediates or waste products.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

Comments/Recommendations

Octachlorocyclopentene is also discussed in 8EHQ-0278-0062.

(a) These data and the earlier related submissions should be referred to the FDA Bureau of Foods, OPP, TS/OE, ERD, Regions IV and VI, and appropriate EPA labs.

(b) The submitter should be contacted about the inadequacies in the report, and a request for the results of the chlordene epoxide residue determinations should be made. Chemical nomenclature should be clarified.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: May 8, 1978 (Revised May 10, 1979)

Approved ___________

SUBJECT: Status Report 8EHQ-0378-0100

Revision Needed ___________

FROM: Frank D. Kover, Acting Director
Assessment Division, OTS (TS-792)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTS (TS-792)

Submission Description

Results of *in vitro* malignant transformation study of MC-984 [bis(1,3-dichloro-2-propyl)-3-chloro-2,2-dibromomethyl-1-propyl phosphate] in mouse BALB/3T3 cells. Several other submissions have concerned this chemical (8EHQ-0178-0033; 8EHQ-0278-0048; 8EHQ-0278-0049; 8EHQ-0278-0053; 8EHQ-0478-0107; 8EHQ-0478-0136). This notice was declassified on May 1, 1978.

Submission Evaluation

The tests demonstrated that MC-984 is capable of inducing malignant transformation in BALB/3T3 cells. The correlation of this test to potential carcinogenicity is still under active debate within the scientific community. The phosphate ester structure could produce delayed neurotoxicity, and the BrCl content raises questions of potential liver toxicity. If industry continues to utilize these types of phosphate esters, they will ultimately have to determine where in a given series the potential for delayed neurotoxicity becomes insignificant.

Current Production and Use

There is no information available on the production and use of this chemical, nor is there an entry in the TSCA Candidate List.

Recommendations

(a) Section 8(b) data should be checked for evidence of commercial significance.

(b) MC-984 may be a candidate for CHIP and/or NIOSH/OSHA consideration if production level is significant.

(c) The submitter should be asked to support his contention that the information submitted reasonably supports a conclusion of substantial risk.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: May 11, 1978 (Revised May 10, 1979) Approved ___________

SUBJECT: Status Report 8EHQ-0378-0101

Revision
Needed ___________

FROM: Frank D. Kover, Acting Director
Assessment Division, OTS (TS-792)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTS (TS-792)

Submission Description

Teratology study of chlorendic anhydride (CA) in rats. This notice was declassified on May 1, 1978.

Submission Evaluation

As a pilot study for teratogenesis, the results are perhaps inconclusive. Had there been any indication of teratogenesis, a more elaborate study would have been in order. Since teratogenesis is difficult to elicit in rats, the doses that were used and the size of the groups could be open to question. However, death did occur in two of the rats given large doses. There are no pharmacokinetic data to indicate that absorption occurred except at the higher doses. Since the compound appears to be a solid, inhalation studies would be complicated. Whether dermal application would be an advantage depends on the amount that can be dissolved in oil. The proof that is lacking in this study is the amount that was absorbed from the administered dose. The compound is a derivative of phthalic anhydride. Phthalic anhydride is capable of reacting with many compounds, particularly phenols, to form phthaleins. These substances theoretically could react with glutathione, tyrosine, and other compounds that occur in cells. If the compound has carcinogenic potential, it may be on this basis rather than via the effects of its expected metabolites. Nevertheless, epoxide formation cannot be ruled out.

Current Production and Use

An estimated 10 million pounds of chlorendic anhydride/chlorendic acid were produced in 1974, with an expected annual growth rate of 10% through 1980. Reported uses of chlorendic anhydride include: flame-retardant polyester resins; hardening agent for epoxy resins; chemical intermediate; source of chlorendic acid.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

Related Past and Present Activities

A CHIP report on hexachlorocylopentadiene contains some discussion of CA.

Comments/Recommendations

Several other submissions have been received on this compound (8EHQ-0278-0058; 8EHQ-0278-0059; 8EHQ-0378-0101; 8EHQ-0478-0127; 8EHQ-0478-0134).

(a) Chlorendic anhydride may be a CHIP candidate, especially if the ORD document does not adequately address this chemical.

(b) NIOSH and OSHA may be interested in some of the notices on chlorendic anhydride.

(c) The submitter should be asked to support his contention that the information presented in this submission reasonably supports a conclusion of substantial risk.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: 28 JUN 1978

SUBJECT: Status Report* 8EHQ-0378-0102

Approved ________________

Revision Needed ________________

FROM: Frank D. Kover
Assessment Division, OTE/OTS

TO: Joseph J. Merenda, Director
Assessment Division, OTE/OTS

Submission Description

Mutagenicity evaluation of hexachlorocyclopentadiene in the mouse lymphoma forward mutation assay. This notice was declassified on 5/1/78.

Submission Evaluation

The deficiency of this test for mutagenicity of hexachlorocyclopentadiene is that the compound is highly toxic to cells. This is not unique to this polyhalogenated unsaturated hydrocarbon. The fact that S9 liver activation reduced the toxicity suggests that this compound is biotransformed in the liver to a significant degree. It is unfortunate that there was not sufficient inactivation of the acute toxicity by the liver system so that a dose-response could be obtained. If this chemical is to be used extensively and no in vitro mutagenesis system can be worked out, it may be necessary to do a full blown carcinogenecity study in vivo. It should be possible to increase the S9 activity by graded amounts in order to obtain sufficient detoxification of hexachlorocyclopentadiene. In this manner, it may be possible to reveal mutagenicity. As it is, there is insufficient evidence to prove or disprove the mutagenicity of hexachlorocyclopentadiene in the test system used. The only potentially positive results were in the activation test at the .00002 and .00008 ul/ml range. It would be good if the test could be repeated for the above range of concentrations in order to determine whether or not the results were repeatable. However, with the equivocal results presented here, submission of this information under section 8(e) is not warranted.

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*NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

Current Production and Use

Current production of hexachlorocyclopentadiene is estimated at between 7 and 50 million lbs. per year with a major portion used as a chemical intermediate in the production of insecticides (many of which are now strictly controlled by EPA) and flame retardants.

Related Past and Present Activities

An early warning report on hexachlorocyclopentadiene is available from the Assessment Division; an assessment document is in preparation by ORD.

Comments/Recommendations

Several submissions have been received on hexachlorocyclopentadiene (8EHQ-1177-0013; 8EHQ-0178-0037; 8EHQ-0178-0038; 8EHQ-0278-0061; 8EHQ-0278-0064; 8EHQ-0378-0099; 8EHQ-0378-0109; 8EHQ-0378-0110).

a) All submissions pertinent to hexachlorocyclopentadiene (and chlorendic anhydride) should be referred to the ORD contact for distribution to the group preparing the HEX assessment document.

b) The submitter should be asked to support his contention that the submitted information reasonably supports a conclusion of substantial risk.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: May 10, 1978 (Revised May 10, 1979) Approved____________

SUBJECT: Status Report 8EHQ-0378-0103

Revision
Needed ____________

FROM: Frank D. Kover, Acting Director
Assessment Division, OTS (TS-792)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTS (TS-792)

Submission Description

Results of pilot teratology and acute inhalation studies of MC-935 [poly (dibromophenylene)oxide] in rats. This report was declassified on May 1, 1978.

Submission Evaluation

MC-935A is probably a high-molecular-weight polymer derived from dibromophenol or from tetrabromodiphenyloxide. Any acute toxicity or teratogenicity would probably be due to the starting monomers or residues that were poorly polymerized.

The inhalation technique used is inadequate because it supplies no evidence that the material was absorbed. It does not give histological data indicating the fate of the dust that the animals inhaled, nor does it supply data on how much adhered to the fur. In addition, the inhalation study did not determine the true concentration of MC-935A by measurement; therefore, the results are of limited value.

The teratology studies suffer from the same weakness in that there is no indication of absorption of the substance by the organism. Under these circumstances, a teratology study would require a huge number of animals to meet the various contingencies of exposure. In this case, the teratology study used too few animals at the start of the experiment and then proceeded to kill several, which further depleted the population.

Current Production and Use

No information was located on the production and use of this chemical; there was no entry in the TSCA Candidate List.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

Comments/Recommendations

Several submissions have been received on this chemical (8EHQ-0278-0066; 8EHQ-0378-0090; 8EHQ-0478-0132). MC-935A may have some flame retardant uses; if so, it will be evaluated as part of the ongoing Assessment Division study of flame retardant technology.

(a) Clarify structure through follow-up to notifier.

(b) Evaluate Section 8(b) data to determine present production level.

(c) Refer this submission and the others listed above to the PBB workgroup.

(d) If the chemical appears commercially viable, it should be given CHIP and/or NIOSH/OSHA consideration.

(e) The submitter should be asked to support his contention that the information presented in this submission reasonably supports a conclusion of substantial risk.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: April 28, 1978

Approved___________

SUBJECT: Status Report 8EHQ-0378-0104

Revision
Needed ___________

FROM: Frank D. Kover, Acting Director
Assessment Division, OTS (TS-792)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTS (TS-792)

Submission Description

Chemical analysis of a trade name product showing the presence of trace quantities of vinyl chloride (VC).

Submission Evaluation

Vinyl chloride is an established carcinogen for animals and humans. Therefore, intermediates that contain VC as an impurity or intermediates that can give rise to VC during processing are of concern as possible environmental pollutants. Of equal concern is the report that the finished products contain residual VC. These, too, are possible sources of environmental pollution with VC. Under these circumstances, we need information about the degree of exposure during preparation for manufacture, the degree of exposure during manufacture, and final dispositions of the finished products. Each stage of information should contain APPROPRIATE analytical chemical data for VC.

Current Production and Use

No information on this product was located in secondary sources. Submitter claims that production and distribution of the VC-contaminated products have been discontinued and customers notified of the situation. Submitter reported that sales of these products over the past 15 months reportedly totaled less than 40,000 gallons.

Recommendations

Follow-up correspondence will be sent to the notifer confirming the production and distribution halt. If this cannot be confirmed, the questions posed in the evaluation section above will be asked of the notifier.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: April 2, 1978

SUBJECT: Status Report 8EHQ-0378-0105

FROM: Frank D. Kover, Acting Director
Assessment Division, OTS (TS-792)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTS (TS-792)

Approved ____________

Revision Needed ____________

Submission Description

Account of urinary dysfunction in workers using a catalyst which contains beta-dimethylaminopropionitrile (95% by weight) and bis(2-dimethylaminoethyl) ether (5% by weight). This notice was declassified on May 9, 1978.

Submission Evaluation

Beta-dimethylaminopropionitrile is related to a compound known to cause neurolathyrisms (neural toxicity associated with natural products found in seeds produced by members of the pea family). Such neurotoxicity could cause the urinary dysfunction. Another possible cause is autonomic nervous system dysfunction. Many dialkylaminoethyl compounds affect the cholinergic and adrenergic branches of the autonomic nervous system.

These mechanisms indicate that either compound present in the catalyst could be responsible for the observed urinary dysfunction.

Current Production and Use

The producer of this catalyst, which is used in the manufacture of polyurethane foams, reports 19 customers of record during 1977. Both component chemicals are on the TSCA Candidate List. Production volume is not known.

Comments/Recommendations

OSHA, NIOSH, and the Maryland Division of Labor and Industry have been notified of the incident involving this catalyst and have initiated action. It appears, therefore, that no further action concerning the catalyst itself is necessary. The component compounds, however, should enter the CHIP phase of assessment.

***NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.**

Supplemental Information (received May 9, 1978)

The submitter notified EPA that the following steps have been taken since their original submission:

(1) Sales of all products containing beta-dimethylaminopropionitrile have been suspended both in the United States and overseas.

(2) Samples of the catalyst and its components have been sent to several laboratories for analytical and/or pharmacological or toxicological studies.

(3) OSHA issued a Health Hazard Alert to all subject catalyst customers on April 4.

(4) The submitter has also initiated studies to develop an analytical method suitable for determining airborne concentrations of dimethylaminopropionitrile.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: December 4, 1978

Approved ____________

SUBJECT: Status Report 8EHQ-0378-0107

Revision
Needed ____________

FROM: Frank D. Kover
Assessment Division, OTE/OTS

TO: Joseph J. Merenda, Director
Assessment Division, OTE/OTS

Submission Description

The results of two mutagenicity studies conducted on MC-984 [bis (1,3-dichloro-2-propyl)-3-chloro-2,2-dibromomethyl-1-propyl phosphate]. The first study involved a rat dominant lethal assay, and the second study involved a reexamination of the activity of MC 984 in the mouse lymphoma forward mutation assay. The initial mouse lymphoma assay was reported as 8EHQ-0278-0053. (MC 984 is also known as VC 984.) This notice was declassified on May 22, 1978.

Submission Evaluation

A recurrent problem with these submissions is a lack of an adequate characterization of the compound that was actually tested. In this case, the test materials were characterized only as an "amber viscous liquid" or a "very viscous yellow liquid." No indication as to the purity of the material or the presence of any contaminants is given, making the submissions extremely difficult to evaluate. Another problem concerns the meaning of the mg/kg and nl/ml values. Do these pertain to a measure of the amount of the viscous liquid which was used in each case or do these, in fact, indicate the amount of active compound that was tested? A more complete description of the composition of the materials actually used in these experiments is needed.

In the dominant lethal assay, the submitter concluded that a "dose-related dominant lethal effect is limited to the first mating week and not observed thereafter." This conclusion is not entirely supportable as the 1-week effect on sperm may indicate an inadequate dose or an alarm reaction on part of the rats. The submitter should be asked to support his conclusion in light of the differing views above.

The data presented in this mouse lymphoma assay are in direct conflict with the conclusions offered earlier in 8EHQ-0278-0053 using the same test

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NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

system. The situation was discussed with Dr. Herbert Rosenkranz of New York Medical College. He recommended that the study be repeated twice to resolve the problem. Dr. Rosenkranz feels that it is good scientific procedure to repeat these particular studies when discrepancies of this nature occur. Nevertheless, in this particular test, MC 984 exhibited considerable toxicity to test cells in a dose-related manner. Because of this, it is difficult to evaluate the mutagenicity of the compound using this particular test.

Current Production and Use

No information on the production and use of MC 984 is available, nor is there a listing in the TSCA Candidate List.

Comments/Recommendations

Several other submissions have been received on MC 984 (8EHQ-1277-0022; 8EHQ-0178-0033; 8EHQ-0278-0048; 8EHQ-0278-0049; 8EHQ-0278-0053; 8EHQ-0378-0100; 8EHQ-0478-0136). Previous status reports have recommended that 8(b) data be checked and that MC 984 be considered for possible CHIP examination.

(a) Remarks offered in the evaluation section should be transmitted to the submitter for his consideration. Particular emphasis should be placed on the problems associated with inadequate analytical data.

(b) This information should be transmitted to NIOSH and OSHA.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: May 8, 1978 (Revised May 10, 1979) Approved ____________

SUBJECT: Status Report 8EHQ-0378-0108

Revision Needed ____________

FROM: Frank D. Kover, Acting Director
Assessment Division, OTS (TS-792)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTS (TS-792)

Submission Description

Acute (96 hour) toxicity study of methanol in bluegill sunfish. This submission was declassified on May 22, 1978.

Submission Evaluation

Methanol does not appear to be toxic to bluegills. No mortality was seen in any of the tanks despite nominal concentrations up to 1,000 mg/l. Nonetheless, several problems with the study are apparent: (a) Static tests were used (as opposed to continuous-flow) and the actual concentration of methanol is unknown. The volatility of methanol may be an important factor in the actual test concentration used. (b) The DO levels of control and experimental tanks were very low (down to 1-2 mg/l) at the end of the tests. Nonetheless, any DO stress on the fish was not exhibited in mortality.

Current Production and Use

About 5 billion pounds of methanol were produced in 1975. The major use of methanol is in the production of formaldehyde. Methanol is also used as an intermediate in the production of other organic compounds and has numerous solvent applications. Potential new uses of methanol which could have significant environmental impact are its use as a liquid chemical fuel and its use as a carbon source for bacteria in sewage treatment plants.

Related Past and Present Activities

An Assessment Division CHIP report on methanol was reviewed by DAA for Testing and Evaluation with a recommendation for Section 4 consideration.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

Comments/Recommendations

(a) Forward a copy of this submission to OTS personnel involved in Section 4 chemical selection activities.

(b) The submitter should be asked to support his contention that the information presented in this submission reasonably supports a conclusion of substantial risk.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: May 8, 1978

SUBJECT: Status Report 8EHQ-0378-0109

Approved ______________

Revision Needed ______________

FROM: Frank D. Kover, Acting Director
Assessment Division, OTS (TS-792)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTS (TS-792)

Submission Description

Results of an industrial hygiene survey conducted at one of the submitter's plants. The surveyed area included the hexachlorocyclopentadiene production unit and the quality control laboratory.

Submission Evaluation

Because of the nature of this submission, no evaluation was undertaken; refer to recommendations below for suggested disposition.

Recommendations/Comments

This notice should be referred to OSHA and NIOSH for evaluation in light of the pertinence of this information to areas of NIOSH/OSHA expertise. The submitter should be asked to support his contention that the information presented in this submission reasonably supports a conclusion of substantial risk.

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*NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: May 8, 1978

SUBJECT: Status Report 8EHQ-0378-0110

Approved ______________

Revision Needed ______________

FROM: Frank D. Kover, Acting Director
Assessment Division, OTS (TS-792)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTS (TS-792)

Submission Description

Results of an industrial hygiene survey conducted at one of the submitter's plants. The survey was conducted to measure airborne concentrations of hexachlorocyclopentadiene and to determine employee exposure to carbon tetrachloride.

Submission Evaluation

Because of the nature of this chemical, no evaluation was undertaken; refer to recommendations below for suggested disposition.

Recommendations/Comments

This notice should be referred to OSHA and NIOSH for evaluation in light of the pertinence of this information to areas of NIOSH/OSHA expertise. The submitter should be asked to support his contention that the information presented in this submission reasonably supports a conclusion of substantial risk.

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*NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: May 2, 1978 (Revised May 10, 1979)

Approved ___________

SUBJECT: Status Report 8EHQ-0378-0111

Revision Needed ___________

FROM: Frank D. Kover, Acting Director
Assessment Division, OTS (TS-792)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTS (TS-792)

Submission Description

Acute toxicity study of hydroxyacetaldehyde dimethyl acetal in bluegill sunfish. This report was declassified on May 22, 1978.

Submission Evaluation

No mortality was seen in bluegills exposed for 96 hours to hydroxyacetaldehyde dimethyl acetal at concentrations up to 100 mg/l. Abnormal behavior ("irritation") was noted in fish exposed to levels above 56 mg/l. Based on the information presented in this submission, the chemical does not appear to be a significant problem.

Current Production and Use

No information was located on production and uses of this chemical; no entry was found in the TSCA Candidate List.

Comments/Recommendations

Several submissions have been received on the class of chemicals related to substituted-acetaldehyde dimethyl acetals (8EHQ-0178-0036; 8EHQ-0178-0039P; 8EHQ-0478-0119).

(a) Section 8(b) data should be checked for evidence of commercial significance.

(b) The submitter should be asked to support his contention that the information presented in this submission reasonably supports a conclusion of substantial risk.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: May 8, 1978

SUBJECT: Status Report 8EHQ-0378-0112

Approved ______________

Revision Needed ______________

FROM: Frank D. Kover, Acting Director
Assessment Division, OTS (TS-792)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTS (TS-792)

Submission Description

Results of an industrial hygiene survey conducted at one of the submitter's plants. The survey was a follow-up to an earlier benzene exposure report (not received by EPA).

Submission Evaluation

Because of the nature of this chemical, no evaluation was undertaken; refer to recommendations below for suggested disposition.

Recommendations/Comments

(a) This notice should be referred to OSHA and NIOSH for evaluation in light of the pertinence of this information to areas of NIOSH/OSHA expertise.

(b) The submitter should be asked to support his contention that the information presented in this submission reasonably supports a conclusion of substantial risk.

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*NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: May 8, 1978

SUBJECT: Status Report 8EHQ-0378-0113

Approved ____________

Revision Needed ____________

FROM: Frank D. Kover, Acting Director
Assessment Division, OTS (TS-792)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTS (TS-792)

Submission Description

Results of an industrial hygiene survey conducted at one of the submitter's plants. The survey was conducted to determine employee exposure to DBCP (1,2-dibromo-3-chloropropane) and carbon tetrachloride.

Submission Evaluation

Because of the nature of this submission, no evaluation was undertaken; refer to recommendations below for suggested disposition.

Recommendations/Comments

This notice should be referred to OSHA and NIOSH for evaluation in light of the pertinence of this information to areas of NIOSH/OSHA expertise. The submitter should be asked to support his contention that the information presented in this submission reasonably supports a conclusion of substantial risk.

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*NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

EPA FORM 1320-6 (REV. 3-76)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: May 1, 1978 (Revised May 10, 1979)

Approved __________

SUBJECT: Status Report 8EHQ-0378-0114

Revision
Needed __________

FROM: Frank D. Kover, Acting Director
Assessment Division, OTS (TS-792)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTS (TS-792)

Submission Description

Acute aquatic toxicity study of methyl acetate in bluegill sunfish. This notice was declassified on May 22, 1978.

Submission Evaluation

The test material was not acutely toxic to bluegills exposed to nominal concentrations up to 100 mg/l for 96 hours in soft water. Behavioral abnormalities (swimming) were noted at concentrations above 56 mg/l. Because no mortality was seen at fairly high levels, methyl acetate does not appear particularly hazardous to bluegills (based on the information contained in this report).

Current Production and Use

Methyl acetate is used in paint remover compounds; as a solvent for lacquer, nitrocellulose, acetylcellulose, and many resins and oils; manufacture of artificial leather; chemical intermediate; synthetic flavoring. Methyl acetate production in 1974 was approximately 8 million pounds.

Comments/Recommendations

No further action is indicated at this time. The submitter should be asked to support his contention that the information presented in this submission reasonably supports a conclusion of substantial risk.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: May 8, 1978 (Revised May 10, 1979)

SUBJECT: Status Report 8EHQ-0478-0115

Approved ____________

Revision Needed ____________

FROM: Frank D. Kover, Acting Director
Assessment Division, OTS (TS-792)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTS (TS-792)

Submission Description

Results of industrial hygiene survey conducted at one of the submitter's plants. The survey involved the FM-680 (bis-1-2 (2,4,6-tribromophenoxy) ethane) production facilities.

Submission Evaluation

Because of the nature of this submission, no evaluation was undertaken; refer to recommendations below for suggested disposition.

Comments/Recommendations

(a) This notice should be referred to OSHA and NIOSH for evaluation in light of the pertinence of this information to areas of NIOSH/OSHA expertise.

(b) The submitter should be asked to support his contention that the information presented in this submission reasonably supports a conclusion of substantial risk.

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*NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: May 3, 1978 (Revised May 10, 1979)

SUBJECT: Status Report 8EHQ-0478-0116

FROM: Frank D. Kover, Acting Director
Assessment Division (TS-792)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation (TS-792)

Submission Description

Reports that the n-octanol/water partition coefficient of tetrabromobisphenol A (FM BP4-A) is about 30,000. The submission notes that a fish bioaccumulation study with this chemical is scheduled in the future.

Submission Evaluation

The partition coefficient of this compound is very high and demonstrates a high potential for bioaccumulation if the material enters the environment in any sizable amount.

Current Production and Use

The U.S. ITC identifies only one producer of FM BP4-A; the recent "Bromine Based Fire Retardants" report identified three producers. Annual production may be of significance as the chemical is used as an intermediate for a good number of other flame retardants in addition to having fire retardant applications of its own. Reported flame retardant applications include use in paper, textiles, and many plastics and polymers (ABS, epoxy, polycarbonate, polyesters, polypropylene, polystyrene, etc.).

Comments/Recommendations

Several other submissions have concerned tetrabromobisphenol A or its derivatives (8EHQ-1277-0025; 8EHQ-0478-0130).

(a) On the basis of the evidence presented here, FM BP4-A should be evaluated by some phase of the CHIP program (fire retardant technology assessment or CHIP treatment as such).

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

(b) The monitoring division should be questioned as to the existence of any monitoring data demonstrating the environmental presence of this compound.

(c) The submitter should be requested to furnish the fish bioaccumulation study as soon as it is completed.

(d) This submission should be referred to the FDA Bureau of Foods as well as appropriate EPA labs.

(e) While the reported n-octanal/water partition coefficient is greater than the 25,000 figure specified in Part V(b)(2) of the March 16, 1978 Policy Statement (43 FR 11110), the submitter has failed to demonstrate the "potential for widespread exposure and any non-trivial adverse effect" associated with this chemical. The submitter should therefore be asked to support his contention that the information presented in this submission reasonably supports a conclusion of substantial risk.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: May 11, 1978 (Revised May 10, 1979)

Approved__________

SUBJECT: Status Report 8EHQ-0478-0117

Revision
Needed __________

FROM: Frank D. Kover, Acting Director
Assessment Division, OTS (TS-792)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTS (TS-792)

Submission Description

Corporate memos outlining the submitter's concern that certain petroleum refinery streams used in the production of unspecified resins may contain polynuclear aromatic hydrocarbons (PNAs).

Submission Evaluation

The class of polynuclear (polycyclic) aromatic hydrocarbons contains many known animal carcinogens. While the information presented in this submission does not conclusively indicate the presence of PNAs in the refinery stocks used for the production of the unspecified resins, the implications are that such a finding is not totally unexpected. If PNAs are identified in the refinery streams or in the resins, then steps must be taken to determine the exposure potential of these materials. Follow-up activities should be initiated to obtain the needed information.

The recent report in Nature (Feb. 2, 1978) shows that petroleum contains a triterpane whose structure differs from the pregnane moiety present in adrenal corticosteroids by containing an additional six-member ring. The ring system is also closely related to the sex steroids. It is also related to squalene, which is a precursor to cholesterol synthesis and occurs abundantly in human skin. Steroid hormones act via a receptor system which differs from the receptor system of ordinary pharmacological agents. The latter triggers a transducer effect in the membrane to release energy for tissue response. Steroid hormones, on the other hand, have access to the nucleus of the cell and its regulating mechanisms. This complexity of receptor-steroid movement through the cytoplasm into the nucleus involves both RNA and DNA.

Current Production and Use

Insufficient information is provided to identify the refinery streams or resins discussed in this submission.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

Comments/Recommendations

Several other submissions have involved PNAs (8EHQ-1277-0026C; 8EHQ-0178-0029; 8EQ-0178-0030; 8EHQ-0278-0044; 8EHQ-0578-0140).

(a) The submitter should be requested to provide additional information on this submission. The chemical products mentioned in the notice should be clarified such that the refinery streams and the resins are clearly identified or characterized. The follow-up should also include a request that the submitter keep EPA informed of developments in this situation as well as indicating when a conclusion is reached.

(b) NIOSH and OSHA should be kept abreast of developments.

(c) The submitter should be asked to support his contention that the information presented in this submission reasonably supports a conclusion of substantial risk.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: May 11, 1978 (Revised May 10, 1979) Approved____________

SUBJECT: Status Report 8EHQ-0478-0118P Revision Needed ____________

FROM: Frank D. Kover, Acting Director
Assessment Division, OTS (TS-792)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTS (TS-792)

Submission Description

Internal corporate memo describing an accidental employee exposure incident (involving an individual who was also identified in the DBCP/tris-related sterility reports).

Submission Evaluation

The causative agent is not identified specifically, although several chemicals are mentioned as possible candidates: ethylene dichloride (EDC), methyl bromide (MeBr), hydrogen sulfide (H_2S), BADMA (bromoacetaldehyde dimethyl acetal?), methanol (MeOH), and DBEA (dibromoethyl acetate?). The reported symptoms include nervousness, restlessness, insomnia, and eye irritation. Any of the chemicals suspected as the cause of the intoxication could produce the symptoms complained of by the victim. They all have effects on the central nervous system. Bromoacetaldehyde acetals were used before the modern era of barbiturates and benzodiazepines to induce sleep.

Current Production and Use

All of the chemicals identified in this submission are large-volume basic industrial products and intermediates except for BADMA and DBEA, which are produced in unknown amounts.

Related Past and Present Activities

CHIP reports are available on EDC and MeOH; MeBr is covered in the halogenated methanes hazard assessment. All are available from the AD.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

Comments/Recommendations

Several of the chemicals have been the subject of other submissions: BADMA (8EHQ-0178-0039P; 8EHQ-0478-0119); MeOH (8EHQ-0378-0108); and DBEA (8EHQ-0977-0005; 8EHQ-0178-0039P; 8EHQ-0278-0070; 8EHQ-0478-0121). This incident apparently took place in the submitter's plant where the DBCP/tris-related sterility problems occurred.

(a) The suitability of submissions such as this should be discussed by the 8(e) staff. This may be a good example of what is not an appropriate 8(e) notice. The submitter should be asked to support his contention that the information presented in this submission reasonably supports a conclusion of substantial risk.

(b) The acronyms DBEA and BADMA should be clarified through a follow-up to the submitter.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: April 24, 1978 (Revised May 10, 1979) Approved____________

SUBJECT: Status Report 8EHQ-0478-0119 Revision Needed ____________

FROM: Frank D. Kover, Acting Director
Assessment Division, OTS (TS-792)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTS (TS-792)

Submission Description

Acute aquatic toxicity study of bromoacetaldehyde dimethyl acetal (BADMA) in bluegill sunfish. This notice was declassified on May 22, 1978.

Submission Evaluation

BADMA is acutely toxic to bluegills. The 96-hour LC_{50} in static tests was 671 mg/l (nominal concentration). Behavioral abnormalities, indicative of stress, were noted at levels above 32 mg/l. All of the mortality occurred within 24 hours, possibly indicating that the chemical had disappeared. pH was held within acceptable limits; DO was low (2-5 mg/l) in test and control tanks. This, however, was probably a minor factor in the mortality. Based on this report, there is no great cause for concern as the reported toxicity levels are moderate.

Current Production and Use

The SRI Directory of Chemical Producers lists two producers of BADMA, implying an annual production in excess of 1,000 pounds. BADMA is used as an intermediate in the production of methylamino acetaldehyde dimethyl acetal (according to a previous submission, 8EHQ-0178-0036); other possible uses are not known.

Comments/Recommendations

The submitter should be asked to clarify the identity of the chemicals noted in 8EHQ-0178-0036 and 8EHQ-0178-0039 as they may be related (or identical) to BADMA.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

(a) The class of chemicals based on acetaldehyde dimethyl acetal may be CHIP candidates as several submissions have been received on them.

(b) The submitter should be asked to support his contention that the information presented in this submission reasonably supports a conclusion of substantial risk.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: May 3, 1978 (Revised May 10, 1979) Approved__________

SUBJECT: Status Report 8EHQ-0478-0120

Revision
Needed __________

FROM: Frank D. Kover, Acting Director
Assessment Division, OTS (TS-792)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTS (TS-792)

Submission Description

Acute toxicity study of sodium acetate in bluegill sunfish. This notice was declassified on May 22, 1978.

Submission Evaluation

Sodium acetate is not very toxic to bluegills (96-hour LC_{50} = 1,000 mg/l). No mortality was seen in any of the test tanks. The chemical might have a high oxygen demand because DO reductions were fairly severe (1.9-1.3 mg/l values) in the test tanks but not the control. Abnormal behavior indicative of stress was observed at concentrations greater than approximately 320 mg/l. The acute toxicity of sodium acetate to bluegills appears to be of minor significance.

Current Production and Use

Sodium acetate sales were in excess of 20 million pounds in 1973. It is used as a dye and color intermediate and in pharmaceuticals, soaps, photography, meat preservation, electroplating, tanning, etc.

Comments/Recommendations

No additional activities are recommended. The submitter should be asked to support his contention that the information presented in this submission reasonably supports a conclusion of substantial risk.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: May 8, 1978 (Revised May 10, 1979) Approved____________

SUBJECT: Status Report 8EHQ-0478-0121 Revision Needed ____________

FROM: Frank D. Kover, Acting Director
Assessment Division, OTS (TS-792)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTS (TS-792)

Submission Description

Acute toxicity study of dibromoethyl acetate in bluegill sunfish. This notice was declassified on May 22, 1978.

Submission Evaluation

Dibromoethyl acetate is toxic to bluegills exposed for short time periods (24-hour LC_{50} = 1.43 mg/l; 96-hour LD_{50} = 1.21 mg/l). At concentrations above approximately 1.0 mg/l, the fish exhibited signs of stress. To fully appreciate the threat of this chemical, OTS should request additional data: physical-chemical properties (especially solubility data); complete copy of this study; and use information. The chemical is fairly toxic.

Current Production and Use

No production and use information was located; the chemical was not entered in the TSCA Candidate List.

Comments/Recommendations

The flame retardant potential of dibromoethyl acetate will be evaluated in the ongoing Assessment Division investigation of flame retardant technology. Two other submissions have been received on this chemical (8EHQ-0977-0005 and 8EHQ-0278-0070). In all cases, dibromoethyl acetate exhibited a moderate to high degree of toxicity in the test systems (rabbit and rat tested in addition to this fish study).

(a) Check Section 8(b) data for evidence of commercial significance.

(b) Consider a CHIP investigation of this chemical on the basis of its degree of acute toxicity in three species.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

(c) Request physical-chemical data from the notifier as well as additional information on the bluegill study. Use information should also be solicited as well.

(d) The submitter should be asked to support his contention that the information presented in this submission reasonably supports a conclusion of substantial risk.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: June 14, 1978 (Revised May 10, 1979) Approved____________

SUBJECT: Status Report 8EHQ-0478-0122 Revision Needed ____________

FROM: Joseph J. Merenda, Acting Director
Assessment Division, OTE/OTS (TS-792)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTE/OTS (TS-792)

Submission Description

Pilot teratology study of PHT-4 (tetrabromophthalic anhydride) in rats. This notice was declassified on May 22, 1978.

Submission Evaluation

The experimental design is sufficiently insensitive to preclude all but the most severe teratogenic effects. This type of compound may be poorly absorbed and/or have a long latent period before signs of toxicity appear (liver and kidney toxicity, endocrine effects, fat storage, and bioaccumulation are of concern).

The dosage volume of 25 ml/kg/day in the controls appears inappropriate; a volume of 7.5 ml/300-g rat is stressful alone.

Current Production and Use

Annual production is not known; however, the U.S. ITC lists one producer, which implies an annual production of greater than 1,000 pounds. PHT-4 is used as a flame retardant for plastics, paper, and textiles (polyesters).

Comments/Recommendations

PHT-4 will be evaluated in the ongoing Assessment Division study of flame retardant technology. It is listed in the recent "Bromine Based Fire Retardants" report.

(a) Section 8(b) data should be evaluated for evidence of commercial significance.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

(b) If production is sufficient, a CHIP evaluation may be advisable.

(c) The submitter should consider retesting the material using more sensitive experimental procedures. The submitter should also be asked to support his contention that the information presented in this submission reasonably supports a conclusion of substantial risk.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: April 27, 1978

SUBJECT: Status Report 8EHQ-0478-0123

Approved ____________

Revision
Needed ____________

FROM: Frank D. Kover, Acting Director
Assessment Division, OTS (TS-792)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTS (TS-792)

Submission Description

Report outlining the results of follow-up sterility tests conducted on employees who were occupationally exposed to DBCP (1,2-dibromo-3-chloropropane) and tris [tris(2,3-dibromopropyl) phosphate]. See 8EHQ-0278-0056 for the results of the initial test. This notice was declassified on May 22, 1978.

Submission Evaluation

The report covers only the effects of DBCP and not those that might result from exposure to tris. The submission notes that the composition and work history of the cohort apparently contain inconsistencies.

The examining physician states explicitly that the workers exposed to DBCP are still having deficient formation of sperm, and therefore deficient capability for reproduction. It is purely speculative on the submitter's part that the sperm-deficient workers in the non-DBCP exposure group (with respect to work station location) had significant exposure to DBCP despite being assigned to other departments. Unless validated, this claim will only serve to obscure the actual cause of the sperm deficiency in these men, which may in fact be traceable to tris exposure, which is documented for several of these individuals.

This is the first indication that sperm-deficient DBCP-exposed workers are not improving despite cessation of exposure (a contention that had not previously been advanced by the affected companies). This information should be transmitted to NIOSH and OSHA as soon as the material has been declassified. These authorities have already received a summary of this information; OTS received this same summary as 8EHQ-0478-0128.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

Current Production and Use

OPP has conditionally suspended DBCP for some uses and completely suspended it for all other uses. Conditional suspension means that only certified pesticide applicators can use DBCP. Unconfirmed reports indicate that tris is no longer being produced domestically; 1975 production is estimated at 7-12 million pounds. Tris was formerly used as a flame retardant for textiles; however, the CPSC has moved against this use. The only current use of tris is as a flame retardant for plastics.

Past and Present Activities

A hazard assessment report on tris is in preparation in the Assessment Division.

Comments/Recommendations

In view of (1) unconfirmed reports that tris is no longer being manufactured, (2) NCI's (unpublished) conclusion that the material is a carcinogen, and (3) CPSC's announced policy to move against suppliers of tris-treated children's sleepwear, no immediate OTS action other than referral is required.

(a) On receipt of the NCI publication concerning the positive identification of tris as a carcinogen, TSCA 8(a) annual notification should be required from known tris manufacturers. If tris is manufactured for any use, EPA should be notified as to amount manufactured, population exposed in the manufacture, destination and use of the product, and estimated population at risk as a result of the product's use.

(b) If DBCP is manufactured for other than pesticidal uses, TSCA 8(a) annual notification should be required from known manufacturers.

(c) These results should be referred to OSHA, NIOSH, CPSC, OPP/OTS, and TS/OE.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: May 3, 1978 (Revised May 10, 1979) Approved____________

SUBJECT: Status Report 8EHQ-0478-0124 Revision Needed ____________

FROM: Frank D. Kover, Acting Director
Assessment Division, OTS (TS-792)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTS (TS-792)

Submission Description

Acute toxicity study of vinyl acetate in bluegill sunfish. This notice was declassified on May 22, 1978.

Submission Evaluation

Vinyl acetate is described as a clear, water-soluble, odoriferous liquid, yet the tests were done using a solvent control. No mention of the solvent's identity was offered nor an explanation for its necessity. The chemical appears to exhibit moderate toxicity, the 96-hour LC_{50} being 13.3 mg/l (nominal concentration). Mortality generally occurred in the first 24 hours. Concentrations of vinyl acetate above 10 mg/l produced evidence of stress in the fish.

Current Production and Use

Production of vinyl acetate in 1975 exceeded 1.2 billion pounds. It is used in the production of polyvinyl acetate, polyvinyl alcohol, polyvinyl butyral, and polyvinyl chloride-acetate resins. These resins are used particularly in latex paints, paper coatings, adhesives, textile finishing, etc.

Related Past and Present Activities

A CHIP report on vinyl acetate is available from the Assessment Division.

Comments/Recommendations

Perhaps the submitter should be questioned as to the rationale for the use of a solvent control in this experiment.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

(a) Due to the high annual production of vinyl acetate, this notice should be reviewed by the ERD.

(b) The submitter should be asked to support his contention that the information presented in this submission reasonably supports a conclusion of substantial risk.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: May 1, 1978 (Revised May 10, 1979) Approved__________

SUBJECT: Status Report 8EHQ-0478-0125 Revision Needed __________

FROM: Frank D. Kover, Acting Director
Assessment Division, OTS (TS-792)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTS (TS-792)

Submission Description

Acute toxicity study of sodium bromide in bluegill sunfish. This notice was declassified on May 22, 1978.

Submission Evaluation

Sodium bromide is not acutely toxic to bluegills exposed for 96 hours to 1,000 mg/1 (nominal concentration) of the chemical. Some abnormal behavior was observed at concentrations above 320 mg/1. DO and pH were within adequate limits. Sodium bromide is water soluble, but low concentrations of it do not appear harmful to bluegills.

This experiment is in essence testing the acute effects of the bromide ion on bluegills as NaBr would likely dissociate in the tanks. In mammalian systems, bromide ion has a long tissue half-life (12 days or longer) and can build up to toxic levels if the exposure is chronic. The effects of elevated tissue bromide levels are lethargy, slowing of cerebration, confusion, disturbed reflexes, etc. Perhaps the effects of long-term exposure of aquatic organisms to bromine should be investigated, especially in light of the possible use of bromine as a water purification agent in the future.

Current Production and Use

Annual production of sodium bromide is not known with any specificity; however, inorganic bromide salts (Na, K, NH_4) have a relatively large annual production. Environmental loading of bromine is fairly high, with most attributable to the combustion of EDB (ethylene dibromide) in leaded gas. Sodium bromide is used in photography, medicines, organic chemicals, etc. The major uses of elemental bromine are gasoline additives, flame retardants, bleaching, etc.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

Related Past and Present Activities

A CHIP report on bromine and bromine compounds is available from the Assessment Division. Current plans call for an OTS contractor evaluation of future market trends in the bromine industry.

Comments/Recommendations

The questions surrounding the chronic effects of bromide on aquatic organisms may deserve investigation before bromine is actually used as a water purifier on a large scale.

(a) Once the confidentiality determination has been made, this study should be referred to ERD for comment.

(b) The submitter should be asked to support his contention that the information presented in this submission reasonably supports a conclusion of substantial risk.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE:	May 8, 1978 (Revised May 10, 1979)	Approved ____________
SUBJECT:	Status Report 8EHQ-0478-0126	Revision Needed ____________
FROM:	Frank D. Kover, Acting Director Assessment Division, OTS (TS-792)	
TO:	Warren R. Muir, Deputy Assistant Administrator for Testing and Evaluation, OTS (TS-792)	

Submission Description

Two acute toxicity studies on bromoacetaldehyde in bluegill sunfish. This notice was declassified on May 22, 1978.

Submission Evaluation

Bromoacetaldehyde is fairly toxic to bluegills exposed for 96 hours (LC_{50} = 2.5 mg/l). There is nominal concentration; a continuous-flow test with constant renewal of the chemical might reveal a much higher toxicity, depending on the volatility of the chemical. Behavioral abnormalities (indicating stress) were observed at test levels above 1.0 mg/l. Most of the mortality occurred within the first 24 hours of the 96-hour test, indicating possible selection or adaptation by the test organism or removal (or degradation) of the chemical. pH levels were adequate in the control and test tanks, but DO was curiously low in the controls while adequate in the test tanks. In tanks where 100% mortality was observed before the 48-hour recording time, no DO measurements were made, thus one cannot be sure that the test chemical, as opposed to low DO, was the actual cause of death.

The test solutions contained only 52% bromoacetaldehyde; thus it is not possible to declare with any certainty that the observed toxicity is attributable solely to bromoacetaldehyde. No analytical data were provided on the test solution.

This chemical appears to be fairly toxic to bluegills; therefore, if bromoacetaldehyde has the potential to enter the aquatic environment, further testing to determine its effects should be undertaken.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

Current Production and Use

No information is available on the production and use of this compound; there is not entry in the TSCA Candidate List.

Comments/Recommendations

Chloroacetaldehyde has been suggested as an active metabolite of vinyl chloride and possibly 1,2-dichloroethane; chloroacetaldehyde has also been shown quite potent in the Ames test. Based on the structural similarity between chloro- and bromoacetaldehyde, consideration should be given to further investigation of bromoacetaldehyde.

(a) Section 8(b) data should be checked for evidence of commercial significance.

(b) Information describing the metabolism of EDB (1,2-dibromoethane) should be checked for mention of bromoacetaldehyde.

(c) Bromoacetaldehyde should be given CHIP scrutiny in combination with the scheduled evaluation of chloroacetaldehyde.

(d) The submitter should be asked to support his contention that the information presented in this submission reasonably supports a conclusion of substantial risk.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: June 15, 1978

SUBJECT: Status Report 8EHQ-0478-0127

Approved ____________

Revision Needed ____________

JM 6/24/78

FROM: Joseph J. Merenda Acting Director
Assessment Division, OTE/OTS (TS-792)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTE/OTS (TS-792)

Submission Description

The submission consists of the results of an evaluation of chlorendic anhydride in the mouse lymphoma forward mutation assay. This notice was declassified on 5/22/78.

Submission Evaluation

Chlorendic anhydride was toxic to mouse lymphoma cells without affecting cloning or mutation frequency significantly.

Current Production and Use

An estimated 10 million lbs. of chlorendic anhydride/acid were produced in 1974 with an expected annual growth rate of 10% through 1980. Reported uses of the anhydride include: flame resistent polyester resins; hardening agent for epoxy resins; chemical intermediate; source of chlorendic acid.

Related Past and Present Activities

An early warning report on hexachlorocyclopentadiene contains some discussion of chlorendic anhydride and is available from the Assessment Division.

Comments/Recommendations

Several other submissions have been received on chlorendic anhydride (8EHQ-0278-0058; 8EHQ-0278-0059; 8EHQ-0378-0101; 8EHQ-0478-0134).

A question arises as to the applicability of this submission per se to Section 8(e). Submitted in a singular fashion, the information fails to satisfy the criteria for substantial risk established for mutagenicity assays in the March 16 Policy Statement. In the first place, the results are negative and secondly, no corrobative information is provided. If

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***NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.**

the information were submitted as part of the package containing several studies on chlorendic anhydride, perhaps then this information would be appropriate as part of the entire presentation, despite the negative findings. The submitter, however, persists in sending discrete bits of information, many of which do not indicate substantial risk in and of themselves, rather than holding the material until a coherent case (according to the definitions and explanations offered in the Policy Statement) for substantial risk can be made. Obviously, in certain cases, a single piece of information is sufficient to indicate substantial risk, but with this particular submitter, the individual bits of information are insufficient (from both the perspective of the Policy Statement and from any reasonable definition of substantial risk) to indicate a substantial risk to health or the environment. The submitter should be encouraged to follow more closely the guidance offered in the Policy Statement with respect to deciding what constitutes substantial risk.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: June 22, 1978

Approved ____________

SUBJECT: Status Report 8EHQ-0478-0128

Revision Needed ____________

FROM: Joseph J. Merenda, Acting Director
Assessment Division, OTE/OTS (TS-792)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTE/OTS (TS-792)

Submission Description

The submission consists of a copy of a letter submitted to NIOSH, OSHA, and OPP regarding sterility retesting (refer to 8EHQ-0278-0056 for the initial test results) of employees exposed to DBCP and/or DBCP-contaminated tris. This is essentially identical (though lacking in detail) to the information contained in submission 8EHQ-0478-0123.

Submission Evaluation

The ten subjects who returned for retesting were divided as follows: four had been exposed to DBCP and six to tris. None of the four workers exposed to DBCP had normal sperm counts on retest although the retest showed some improvement, possibly significant in one case. Of the six that had been exposed to tris, two who had low sperm counts on the first examination had normal counts on the second. Two workers did not have defective counts on the initial examination. Two subjects exposed to DBCP who had no counts taken on the first examination had normal counts on the second examination. (The significance of this observation is dubious, particularly since the restoration following DBCP exposure is much slower, if it occurs at all. This would indicate that the two people with normal counts on the second examination may have had normal counts previously.)

For whatever reason, whether it be duration and intensity of exposure or inherently less toxicity to sperm by tris, the DBCP group appears to have suffered more testicular damage and is recovering, if at all, at a much slower rate than those exposed to tris. The deficiency in the study is that there are no sperm counts prior to exposure and no way of knowing if fluctuations occur in the sperm counts of these men.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

Current Production and Use

Unconfirmed reports indicate that tris is no longer being produced domestically; 1975 production is estimated at 7-12 million pounds. Tris was previously used as a flame retardant for textiles; however, CPSC has moved to control this use. The only current use is as a flame retardant for plastics.

OPP has conditionally suspended DBCP for some uses and completely suspended it for all other uses. Conditional suspension means that only certified pesticide applicators can use DBCP.

Comments

The submitter appears to be maintaining that it is the DBCP contamination in tris and not the tris itself which is causing the problem. This contention remains to be proved at this point.

Recommendations

In view of (1) unconfirmed reports that tris (2,3-dibromopropyl) phosphate is no longer manufactured, (2) NCI's (unpublished) conclusions that the material is a carcinogen, (3) CPSC's announced policy to move against suppliers of tris-treated children's sleepwear, and (4) EPA/OPP's action to restrict the only known (pesticidal) uses of DBCP:

(a) Section 8(b) data should be checked for evidence of continued domestic production of tris. This follow-up should include the identification of possible tris importers. Section 8(a) data should also be checked to confirm whether DBCP is being manufactured for other than pesticidal uses.

(b) Recommend to Office of Chemical Control that it consider developing a significant new use rule for DBCP.

(c) This submission should be referred to OSHA, NIOSH, CPSC, OPP/OTS, and TS/OE.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: June 14, 1978

Approved ____________

SUBJECT: Status Report 8EHQ-0478-0129

Revision Needed ____________

FROM: Joseph J. Merenda, Acting Director
Assessment Division, OTE/OTS (TS-792)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTE/OTS (TS-792)

Submission Description

Memo describing a cattleman's complaint to the notifier that three calves were aborted recently and that the cause was contamination (by an unknown agent) of a creek adjacent to a chemical manufacturing site.

Submission Evaluation

While insufficient information is provided for a toxicological evaluation, nevertheless, the loss of three calves via abortion is a sign that something untoward is happening. This situation requires investigation. The Agency has to determine if the cause is chemically related; if so, corrective action must be undertaken. This should be initiated as soon as possible.

Current Production and Use

Insufficient information is provided to permit an evaluation.

Recommendations

(a) The submitter should be sent follow-up correspondence asking what steps, if any, have been undertaken in response to this complaint.

(b) Notify EPA Region V of this situation and ask them to check into the complaint.

(c) FDA should be kept abreast of developments if food contamination potential becomes apparent.

(d) The Illinois EPA should also be alerted to this situation.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: June 14, 1978 (Revised May 10, 1979) Approved ____________

SUBJECT: Status Report 8EHQ-0478-0130 Revision Needed ____________

FROM: Joseph J. Merenda, Acting Director
Assessment Division, OTE/OTS (TS-792)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTE/OTS (TS-792)

Submission Description

Pilot teratology study of tetrabromobisphenol A (FM BP4-A) in rats.

Submission Evaluation

This submission states that there were no teratogenic effects attributable to tetrabromobisphenol A at doses up to 10 g/kg/day. The study, however, was deficient in a number of ways:

(1) The number of test animals was too small.

(2) Animals were exposed only on gestation days 6-15. Potential dams should be exposed for at least several weeks before impregnation.

(3) No pregnancies were allowed to continue to term. Significant teratogenic effects could be manifested after birth.

Since only five rats received the particular dose of this compound, it is not possible to say whether or not the post-implantation losses seen in one rat are treatment related. The compound has definite toxicity when administered by mouth in doses above 3 g/kg/day. The green-colored stools suggest an effect on bile pigment formation metabolism. This compound somewhat resembles diethyl stilbestrol (DES) in chemical structure; therefore, immediate teratogenic action might not occur, but delayed carcinogenic action on the offspring and on the mother might occur. The molecular weight and the presence of the four bromine atoms would favor liver toxicity.

Questions that need to be answered are:

(1) To what extent are the OH groups conjugated in the body, and is this conjugation sufficient to result in excretion by the kidneys?

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

(2) Are the bromine atoms capable of removal by bacteria and molds in the environment?

(3) Does the compound or its conjugates accumulate in fats?

Current Production and Use

The U.S. ITC identifies only one producer of FM BP4-A; the recent report on "Bromine Based Fire Retardants" identifies three producers. Annual production may be sizable as FM BP4-A is used as an intermediate for a good number of other flame retardants in addition to having fire retardant applications of its own. Reported flame retardant applications include use in paper, textiles, and many plastics and polymers (ABS, epoxy, polycarbonate, polyesters, polypropylene, polystyrene, etc.).

Comments/Recommendations

Several other submissions have concerned tetrabromobisphenol A or its derivatives (8EHQ-1277-0025; 8EHQ-0478-0116; 8EHQ-0578-0142). The use pattern and chemical properties imply potential for environmental exposure. The compound has a moderately high octanol-water partition coefficient (30,000; 8EHQ-0478-0116) and is likely relatively persistent.

(a) The chemical was previously recommended for CHIP examination (8EHQ-0478-0116).

(b) The submitter should be alerted to the weaknesses evident in the submitted study. The submitter also should be asked to support his contention that the information presented in this submission reasonably supports a conclusion of substantial risk.

(c) This submission and others on FM BP4-A should be referred to the PBB workgroup for consideration in their examination of brominated flame retardants.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: June 14, 1978 (Revised May 10, 1979) Approved____________

SUBJECT: Status Report 8EHQ-0478-0131 Revision Needed ____________

FROM: Joseph J. Merenda, Acting Director
Assessment Division, OTE/OTS (TS-792)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTE/OTS (TS-792)

Submission Description

Acute toxicity studies of 3-bromo-2,2-dimethylpropyl-2-chloroethyl-2-bromoethyl phosphate in rats and rabbits. The notice was declassified on May 22, 1978.

Submission Evaluation

The dermal toxicity study in rabbits demonstrated the following effects: hypoactivity; decreased limb tone; ataxia; and one death (a male in the high [20,000 mg/kg] dose group). The signs exhibited by the rabbits could be due to (a) central nervous system effects in the spinal cord or cerebellum, (b) peripheral nervous system action similar to that seen with cresyl phosphates, or (c) neuromuscular junction effects analogous to myasthenia gravis. In any event, this chemical appears to be a neurotoxin that is absorbed through the skin. The study itself was poorly performed (too few animals; CNS effects not fully characterized; no controls used; cause of death not determined; no microscopic examination of tissues; and no determination of the blood levels or the metabolites of the compound).

The rat acute oral toxicity study was well performed as far as it went. The LD_{50} values and confidence limits were incorrectly calculated, however. The (combined male and female rat) LD_{50} should be 1,950 (1,485-2,559) mg/kg and not the reported 1,995 (1,635-2,434) mg/kg. The slope, therefore, changes to 1.48 and not 1.67 as reported. The lack of gross or histopathology is a weakness in many of these studies, including this one.

It may be advisable to repeat these studies using multiple doses and good pathological examination to determine possible target organs. Neuropathology should be investigated in addition to effects on viscera. Further testing employing chickens should also be undertaken.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

Current Production and Use

No information is available on the current production and use of this compound; there is no entry in the TSCA Candidate List.

Comments/Recommendations

This chemical may have flame retardant uses; if so, it will be evaluated in the ongoing Assessment Division investigation of flame retardant technology.

(a) Section 8(b) data should be checked for evidence of commercial production.

(b) If the production level is sufficiently great, a CHIP investigation of this material is suggested.

(c) The submitter should be asked to support his contention that the information presented in this submission reasonably supports a conclusion of substantial risk.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: May 3, 1978 (Revised May 10, 1979) Approved____________

SUBJECT: Status Report 8EHQ-0478-0132 Revision Needed ____________

FROM: Frank D. Kover, Acting Director
Assessment Division, OTS (TS-792)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTS (TS-792)

Submission Description

Results of three tests conducted with poly(dibromophenylene oxide) (MC 935A). The first test was a mutagenicity evaluation, and the latter two were acute toxicity studies on bluegills and trout. This notice was declassified on May 22, 1978.

Submission Evaluation

The mutagenicity evaluation employed the BALB/3T3 mouse lymphoma cell test system. The preliminary results provided in this notice indicated a positive response; however, any conclusions must await receipt of the final report.

Rainbow trout and bluegills were used in the acute (96 hour) static bioassay of MC 935A. The compound is reportedly only slightly soluble in acetone, although soluble in water. The test tanks contained a precipitate of the material, which means that the initial nominal concentration is nowhere near the actual concentration. The true value is likely to be much lower than the reported concentrations due to the removal of the material from solution by precipitation. Bluegills and trout showed no mortality at the nominal concentrations used (up to 1,000 mg/l). Both species exhibited behavioral effects (irritability - bluegills; excitability - trout) indicating stress at concentrations above 32 mg/l. pH was within acceptable limits throughout the test. DO showed no decrease during the rainbow trout test but declined in the bluegill tanks (9.0 to 5.2 mg/l in the control tank; 9.2 to 3.4 mg/l in the acetone control; and 9.1 to 2.7 mg/l in the test tanks). This observation on the surface, appears inconceivable, and no explanation was (or is presently being) offered. No replicate tests or tanks were used.

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MC 935 is not acutely toxic to rainbow trout and bluegills at the levels actually employed in this experiment. However, the use of nominal concentration reporting rather than actual measured values precludes any real evaluation of the acute toxicity of this substance. Among the other aspects that are not adequately covered are a description of the physical-chemical properties of MC 935 and the purity of the test material.

Current Production and Use

No information was located on the production and use of this chemical; there was no TSCA Candidate List entry.

Comments/Recommendations

Several other submissions have been received on MC 935A (8EHQ-0278-0066; 8EHQ-0378-0090; 8EHQ-0378-0103). This chemical will be evaluated as part of the ongoing Assessment Division examination of flame retardant technology.

(a) All submissions on MC 935A should be referred to the PBB workgroup.

(b) The questions raised in the evaluation section should be clarified with a follow-up to the notifier; the molecular structure is also unclear. The submitter should also be asked to support his contention that the information presented in this submission reasonably supports a conclusion of substantial risk.

(c) Section 8(b) data should be checked for evidence of commercial significance.

(d) This chemical may be a CHIP candidate if production is significant.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: May 3, 1978 Approved____________

SUBJECT: Status Report 8EHQ-0478-0133 Revision Needed ____________

FROM: Frank D. Kover, Acting Director
Assessment Division, OTS (TS-792)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTS (TS-792)

Submission Description

Report that a commercial mixture of sodium nitrite and triethanolamine is contaminated with 6 ppm of N-nitrosodiethanolamine. This notice was declassified on May 22, 1978.

Submission Evaluation

It is not surprising that nitrosamine contamination was encountered in this mixture as other similar formulations (cutting fluids and some cosmetics) are also known to have a nitrosamine problem. N-nitrosodiethanolamine is, as reported in the submission, a known rat carcinogen. It is essential that users of this product be informed of the nitrosamine problem so that proper caution can be exercised. Disposal of this product may also merit inquiry.

Current Production and Use

The current production and use of this specific product are not known; similar generic mixtures, however, are produced in the millions of pounds per year range.

Related Past and Present Activities

A CHIP report on cutting fluids is available from the Assessment Division; some discussion of N-nitrosodiethanolamine can be found in that report.

Comments/Recommendations

Several European countries as well as Canada have banned the use of nitrate/nitrite salts in combination with secondary and tertiary amines in cutting

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fluids because of the nitrosamine problem. NIOSH, OSHA, and FDA are currently addressing the problem of nitrosamine-contaminated products. OTS must be prepared to assist these other agencies wherever possible, e.g., 8(a) information on the identification of nitrosamine-contaminated products, 8(d) information on animal studies conducted with (a) nitrosamine-contaminated products (hydraulic fluids, cutting fluids, etc.) or (b) nitrosamines in general (this will bring in a lot of extraneous information, but the first approach may miss important studies if not carefully drafted).

(a) The notifier should be requested to inform all users and distributors of this product of the nitrosamine problem.

(b) Use information should be requested from the notifier and, if appropriate, OSHA, NIOSH, FDA, and/or CPSC should be alerted to any problem areas within their jurisdiction (based on the pattern of use).

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: June 14, 1978

SUBJECT: Status Report 8EHQ-0478-0134

Approved ____________

Revision
Needed ____________

FROM: Joseph J. Merenda, Acting Director Jm
Assessment Division, OTE/OTS (TS-792)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTE/OTS (TS-792)

Submission Description

Acute toxicity studies of chlorendic anhydride (CA) in rabbits and rats. This notice was declassified on 5/22/78.

Submission Evaluation

The sample of chlorendic anhydride was 98.81% pure; the remaining 1.19% was not characterized.

Under the conditions of the test, CA would be considered a primary eye irritant in rabbits. In the rabbit primary skin irritation study, erythema and edema occurred in all test animals (500 mg of CA applied once; response was the same with intact and abraded skin).

The rabbit acute dermal toxicity study used only 8 animals, 4 per dose group (2 of each sex), and there were no controls. The compound is absorbed through the skin of rabbits and produced symptoms in all those tested. CA was lethal to both male rabbits at the higher dose (2,000 mg/kg); one must assume, therefore, until proven otherwise that chlorendic anhydride is more toxic to males. The described effects indicate generalized congestion in various organs, particularly the lungs. These may have resulted either from irritation and release of histamine or from the alarm reaction via stimulation of the adrenal cortex. Ataxia, decreased limb tone, abnormally slowed breathing, and hypoactivity were observed in the longer-lived (7 vs. 4 days) male rabbit (at the high dose) and may indicate CNS effects by dermal exposure.

The toxicity (oral, acute) observed in rats may be attributed to the consequences of an alarm reaction via the adrenal glands. The alarm reaction can cause pathologic changes in the thymus and gastrointestinal tract and may result in irreversible cardiovascular shock. One female rat demonstrated alopecia, or abnormal loss of hair between days 6-11. Alopecia occurs frequently in rats that have vitamin and nutritional

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*NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

deficiencies. Perhaps the submitter should be asked to clarify if this was the case. Once again, various CNS-related effects were observed in the test animals.

Current Production and Use

An estimated 10 million lbs. of chlorendic anhydride/acid were produced in 1974 with an expected annual growth rate of 10% through 1980. Reported uses of the anhydride include: flame resistant polyester resins; hardening agent for epoxy resins; chemical intermediate; source of chlorendic acid.

Related Past and Present Activities

An early warning report on hexachlorocyclopentadiene contains some discussion of CA and is available from the Assessment Division.

Comments/Recommendations

Several other submissions have been received on CA (8EHQ-0278-0058; 8EHQ-0278-0059; 8EHQ-0378-0101; 8EHQ-0478-0127).

a) The submitter should be asked to address the alopecia comment raised in the evaluation section. Better analytical characterization of the samples should also be requested.

b) An early warning examination of CA is scheduled for the near future. It may be necessary to use section 8(d) to collect sufficient information for the report.

c) NIOSH and OSHA may be interested in this information.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: May 1, 1978 (Revised May 10, 1979)　Approved ____________

SUBJECT: Status Report 8EHQ-0478-0135　Revision Needed ____________

FROM: Frank D. Kover, Acting Director
Assessment Division, OTS (TS-792)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTS (TS-792)

Submission Description

Letter describing an individual who developed a malignant bladder cancer following occupational exposure to several suspected animal carcinogens (especially toluene-2,4-diamine and toluene-2,6-diamine).

Submission Evaluation

Most aromatic amines are suspected carcinogens, as is well known in the dye industry. As a class they cause liver pathology and are excreted in the urine after transformation in the liver. Benzidine and beta-naphthylamine are the classical examples of such compounds producing cancer of the urinary bladder.

Some diamines, notably p-phenylenediamine, are skin sensitizers and release histamine. p-Phenylenediamine is used in mascara and fur dyes. The former use was recently banned by the FDA. Toluene-2,6-diamine has some of the properties of p-phenylenediamine.

Current Production and Use

Toluene-2,4-diamine production in 1975 exceeded 190 million pounds, according to the U.S. ITC. The principal use is in the production of toluene diisocyanate (TDI) foams, elastomers, and coatings; other uses include dye intermediate and a direct oxidation black for furs and hair.

Toluene-2,6-diamine is produced as such by only one company; however, it is present in the toluene-2,4-diamine used to make TDI foams and resins.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

Related Past and Present Activities

The OTE "expert evaluation" contractor has examined selected articles pertinent to the carcinogenic and mutagenic potential of toluene-2,4-diamine.

Comments/Recommendations

It appears from the submission that the cancer is located in the urinary bladder (as opposed to the gall bladder), although this point is not specifically made as such.

(a) This submission should be referred to NIOSH and OSHA for appropriate follow-up.

(b) A letter should be sent to the submitter requesting that other workers (current and previous) be checked for reports of possible malignancies and that the results be forwarded to EPA.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: May 4, 1978 (Revised May 10, 1979)

Approved ___________

SUBJECT: Status Report 8EHQ-0478-0136

Revision Needed ___________

FROM: Frank D. Kover, Acting Director
Assessment Division, OTS (TS-792)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTS (TS-792)

Submission Description

Corporate memo describing apparently conflicting data in two mouse lymphoma assays with MC-984 [bis(1,3-dichloro-2-propyl)-3-chloro-2,2-dibromomethyl-1-propyl phosphate]. These studies were previously submitted as 8EHQ-0278-0053 and 8EHQ-0478-0107. MC-984 has also been the subject of several other submissions (8EHQ-1277-0022; 8EHQ-0178-0033; 8EHQ-0278-0048; 8EHQ-0278-0049; 8EHQ-0378-0100). (MC-984 is also known as VC-984).

Submission Evaluation

The discrepancy between the two mouse lymphoma studies was noted at the time of our initial evaluation. The situation was discussed with Dr. Herbert Rosenkranz of New York Medical College. He recommended that the study be repeated twice to resolve the problem. Dr. Rosenkranz feels that it is good scientific procedure to repeat these particular studies when discrepancies of this nature occur.

Current Production and Use

No information on production and use is available, nor is there a listing in the TSCA Candidate List.

Comments/Recommendations

(a) The remarks offered in the evaluation section should be transmitted to the submitter for his consideration.

(b) The submitter should be asked to support his contention that the information presented in this submission reasonably supports a conclusion of substantial risk.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: June 21, 1978 (Revised May 10, 1979)

Approved ___________

SUBJECT: Status Report 8EHQ-0478-0137

Revision
Needed ___________

FROM: Joseph J. Merenda, Acting Director
Assessment Division, OTE/OTS (TS-792)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTE/OTS (TS-792)

Submission Description

Acute inhalation toxicity of FM 100 (hexabromocyclododecane) in rats.

Submission Evaluation

The weakness of this study is that it was not done on FM 100 but on a residue which contains a flammable liquid (FM 100 presumably has low flammability; therefore, some other material must also be present). In this instance, the absence of controls is not of as great a concern to as the fact that the animals showed dyspnea. This could be due either to reflex nervous sytem effects or to direct irritant effects on the tracheobronchial tree and/or the lungs. The squinting suggests that there was considerable irritation. The fact that effects persisted beyond the exposure period and that there was considerable loss in body weight suggests that there was pulmonary damage. The dry blood seen around the nose and in the passageway of the lungs at autopsy suggests that irritant injury had occurred. The most important point at this time concerns an adequate analytical characterization of the test compound.

Current Production and Use

Hexabromocyclododecane (HBCD) is listed in the Directory of Chemical Producers, thus indicating that it is produced in commercial quantities (>1,000 lb/yr). HBCD is used as a fire retardant in copolymers of styrene with acrylonitrile, N-vinylpyrrolidine, divinylbenzene, methylacrylate, poly (methyl methacrylate), or polyethylene. It is also used as a fire retardant in molded and foamed thermoplastic polystyrenes and in polypropylene-based molding compositions. When incorporated into these plastics, HBCD imparts a self-extinguishing property to the material.

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HBCD is also used in the production of adhesives used for cementing (luting) polystyrene foam sheets. This use arises from its ability to reduce the molding time necessary for cellular polystyrene particles to form into a compact foam block.

Comments/Recommendations

Several other submissions have been received on FM 100 (8EHQ-0278-0051; 8EHQ-0278-0065; 8EHQ-0278-0088). The chemical will be evaluated as part of the Assessment Division's ongoing study of flame retardant technology. FM 100 may be an environmentally persistent compound.

(a) This submission, like others, was deficient in a number of areas. The notifier should be asked to provide adequate analytical data on the composition of the mixture tested, gross findings on death, clinical observations, and physical-chemical data on the test substance.

(b) This submission should be referred to NIOSH and OSHA.

(c) The submitter should be asked to support his contention that the information presented in this submission reasonably supports a conclusion of substantial risk.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: May 5, 1978 (Revised May 10, 1979)   Approved__________

SUBJECT: Status Repcrt 8EHQ-0478-0138P   Revision Needed __________

FROM: Frank D. Kover, Acting Director
Assessment Division, OTS (TS-792)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTS (TS-792)

Submission Description

Corporate memo describing a case of eye irritation in an office worker due to dicyclopentadiene alcohol and/or benzoyl chloride. Several submissions have noted problems with occupational exposure to dicyclopentadiene or its alcohol (8EHQ-1177-0017P; 8EHQ-0278-0077P; 8EHQ-0378-0097).

Submission Evaluation

An office worker in a chemical plant reported moderate eye irritation following possible exposure to benzoyl chloride and/or dicyclopentadiene. Either compound is capable of producing this type of irritation. The metabolites of benzoyl chloride are benzoyl glycine and hippuric acid. Likely metabolites of dicyclopentadiene are glucuronides or ethereal sulfates. Any of these metabolites are easily measured in urine samples.

Production line workers may be exposed to higher levels of these compounds. Urine tests on these workers would help define the extent of exposure to the chemicals of concern.

Current Production and Use

Annual production of dicyclopentadiene alcohol is not known; there is no entry in the TSCA Candidate List. Dicyclopentadiene, the parent compound, was produced in excess of 77 million pounds in 1975 (includes cyclopentadiene). Benzoyl chloride is used in the production of pharmaceuticals, as an intermediate for the introduction of the benzoyl group, and as an intermediate for the production of other organics. Production level is not known, but is greater than 1,000 pounds per year.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

Comments/Recommendations

(a) Notify OSHA of incident for possible follow-up. This plant site may be a candidate for a NIOSH inspection visit as several problems have been apparent there.

(b) Request full report from attending physician.

(c) Dicyclopentadiene is scheduled for CHIP treatment in the near future.

(d) The submitter should be asked to support his contention that the information presented in this submission reasonably supports a conclusion of substantial risk.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: May 2, 1978 Approved____________

SUBJECT: Status Report 8EHQ-0578-0139 Revision Needed ____________

FROM: Frank D. Kover, Acting Director
Assessment Division, OTS (TS-792)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTS (TS-792)

Submission Description

A letter reporting that two trade name products which are sold to cosmetics manufacturers contain 2-chloroethanol at concentrations between 1 and 3%. The trade name mixture when formulated into the cosmetics represents 1 to 2% of the final cosmetics products (cream rinses and other hair products). Thus the 2-chloroethanol concentration of the commercial cosmetics is between 0.01 and 0.06%.

Submission Evaluation

Ethylene chlorohydrin (2-chloroethanol) is a known highly toxic compound, both in liquid and vapor form. The vapors affect the lungs, heart, and brain. The liquid is irritant to skin and mucous membranes and is readily absorbed through the skin. The absorbed compound causes kidney and liver degeneration. The effects may be cumulative. Three percent residues of unreacted 2-chloroethanol in the finished product is a highly significant amount of such a toxic compound and does present a substantial risk of injury to health. Because the finished products are used in the manufacture of cosmetics that are applied to the scalp and have access to the rest of the skin and because the effects of 2-chloroethanol are reported to be cumulative, OSHA should be notified to determine effects on workers and FDA should be notified for possible effects on consumers, even though the finished product will have no more than 0.06% chloroethanol.

Current Production and Use

The annual production of the two trade name products is not known. 2-Chloroethanol, as such, has many uses: solvent, organic intermediate, etc. Annual production of the chemical is reportedly greater than 1,000 pounds; however, the actual production is likely to be appreciably higher.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

Related Past and Present Activities

The Assessment Division has a Hazard Assessment on haloalkanols scheduled for completion in March 1979.

Comments/Recommendations

(a) This information should be transmitted to the FDA Division of Cosmetics Technology as rapidly as possible for appropriate follow-up.

(b) Referral to NIOSH and OSHA also appears advisable.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: June 28, 1978

SUBJECT: Status Report 8EHQ-0578-0140

Approved ____________

Revision Needed ____________

FROM: Joseph J. Merenda, Acting Director
Assessment Division, OTE/OTS (TS-792)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTE/OTS (TS-792)

Submission Description

Results of mouse skin painting studies conducted with various petroleum distillates.

Submission Evaluation

The significant point here is that the report shows that several of the seven tested petroleum distillates induced squamous cell carcinomas in the test animals (the report clearly states that 4/7 induced squamous cell carcinomas; the 3 remaining distillates were shown to have induced carcinomas following unspecified later studies on other materials). The time to first observable tumor varied from three months (four of the seven mixtures in both sexes) to one year (one of the mixtures; in females only, the males developed tumors at six months). Undefined later studies determined the following tumor types: squamous cell carcinomas (observed with all seven of the test oils); benign epithelial papillomas; hyperkeratosis; acanthosis; and "conditions of irritation having mononuclear cell invasion of tissue." An estimate is offered that, in most cases, "at least 80% of (the) observable masses would be classified as tumors (benign or malignant) with a great majority being benign epthelial papillomas."

The applied dose was rather large (20 mg thrice weekly) and the test materials appear to (possibly) be acting as their own initiators and/or promoters.

A more complete review of the information generated in preparing this notice is indicated, therefore, the following should be requested:

a) All relevant data (complete report with raw data; chemical analysis of the tested petroleum distillates).

b) Complete description of the "later studies" (copy of final report; raw data; slides; any analytical work) determining the histopathology of any tumors, including those possibly found in internal organs.

***NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.**

Current Production and Use

Six of the seven oils are apparently still available commercially; one has been modified and is no longer sold in the form tested. Petroleum distillates are very complex mixtures of hydrocarbons derived from crude oil. They are generally characterized by viscosity and identity of the refinery stream (paraffinic, naphthenic, catalytically cracked, etc.).

Related Past and Present Activities

OPP has scheduled a conference to address the question of petroleum distillates.

Comments/Recommendations

Several other submissions have involved petroleum distillates (8EHQ-1277-0026C; 8EHQ-0178-0029; 8EHQ-0178-0030; 8EHQ-0278-0044; 8EHQ-0478-0117).

a) This information should be referred to NIOSH and OSHA as much exposure to these products is occupational in nature. CPSC and OPP should also receive the available information.

b) The information outlined in the evaluation section should be requested.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: December 5, 1978 (Revised May 10, 1979) Approved____________

SUBJECT: Status Report 8EHQ-0578-0141 Revision Needed ____________

FROM: Frank D. Kover
Assessment Division, OTE/OTS

TO: Joseph J. Merenda, Director
Assessment Division, OTE/OTS

Submission Description

The results of three separate tests on VC 935A [poly(dibromophenylene) oxide; also known as MC 935A]: (a) modified Draize multiple insult test in humans; (b) acute toxicity in Daphnia (water flea); (c) transformation assay in mouse BALB/3T3 cells.

Submission Evaluation

(a) It would be helpful to know how the modification of the Draize test was used and how this modification differs from the standard Draize test. The results suggest that about 6% of the subjects experienced cumulative irritant reaction. The results suggest that the compound or the plastic has cumulative irritant potential unless the reactions experienced by the three subjects can be otherwise accounted for. Since this polymer may be derived from dibromophenol or dibromodiphenol oxide, it would be desirable to know how much of these materials and other low-molecular-weight substances are present in the plastic. These low-molecular-weight compounds might account for the cumulative irritation.

(b) According to this static acute bioassay, MC 935A is not lethal to 50% of the test Daphnia at very low (≤5-6 μg/l) concentrations. Higher concentrations of the compound were not tested because of its limited solubility; concentrations greater than 5.6 μg/l resulted in the formation of a precipitate which entrapped the Daphnia. DO and pH were acceptable throughout the test. The report states that the no-effect level was 3.2 μg/l; however, it is not clear if the "effect" is lethality or some behavioral aberration. Five percent mortality was seen at the next higher concentration, 5.6 μg/l (the highest concentration tested because of the precipitation problems noted earlier). If this mortality was not due to random effects and can in fact be attributed to the chemical, this would mean that MC 935A is very toxic to

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Daphnia (LC_{50} in the ppb range). Although the limited water solubility may mediate the effects on pelagic organisms, the indication that this chemical has any biological activity at such low levels is cause for concern. In the end analysis, the test was not sufficiently definitive nor did it yield sufficient information to support any strong conclusions. It may be wise to retest that material to confirm its possible extreme toxicity to Daphnia.

(c) MC 935A caused malignant transformations in BALB/3T3 cells; thus some concern for its oncogenic potential should be recognized. The results could be due to unreacted monomer, etc., in the plastic. If there is significant human exposure to this material, then more intensive studies are indicated because there is the possibility that the plastic or entrapped chemicals are oncogenic.

Comments/Recommendations

Several submissions have been received on this chemical (8EHQ-0278-0066; 8EHQ-0378-0090; 8EHQ-0378-0103; 8EHQ-0478-0132).

(a) Section 8(b) data should be checked to determine the annual production of VC 935A.

(b) If the chemical is commercially viable, it should be given CHIP and/or NIOSH/OSHA consideration.

(c) This submission should be referred to the PBB workgroup.

(d) The submitter should be asked to provide more information supporting his contention that VC 935A presents a substantial risk of injury to health or the environment.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: June 15, 1978 (Revised May 10, 1979) Approved ____________

SUBJECT: Status Report 8EHQ-0578-0142 Revision Needed ____________

FROM: Joseph J. Merenda, Acting Director
Assessment Division, OTE/OTS (TS-792)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTE/OTS (TS-792)

Submission Description

This notice reports the results of three tests conducted on tetrabromobisphenol A (FM BP4A). The first two studies investigated the acute toxicity of FM BP4A in bluegill sunfish and rainbow trout; the third study involved a modified Draize multiple insult test in humans.

Submission Evaluation

Bioassays of tetrabromobisphenol A were conducted using rainbow trout and bluegill sunfish. The chemical is fairly toxic to both species, the 96-hour LC_{50} being 0.40 mg/l for trout and 0.51 mg/l for bluegills. Behavioral abnormalities (irritation, erratic swimming behavior, labored respiration) were seen in bluegills at levels below 0.32 mg/l and in rainbow trout below 0.18 mg/l. These concentrations are nominal, i.e., no measurement of the actual concentration was conducted; therefore, all results can be reviewed only qualitatively. The compound is soluble in acetone, which was used as the carrier in these experiments. No replicate tests or tanks were used. DO and pH seemed within acceptable limits, although DO was reduced to 2-4 mg/l during the course of the 96-hour test. No mention of the purity of the compound was made; thus the presence of potential contaminants cannot be ruled out. The low LC_{50} and low effect levels attributed to FM BP4A are cause for great concern if the material enters surface waters. A previous submission (8EHQ-0478-0116) indicated that the octanol-water partition coefficient for this compound was 30,000. If this material has a tendency to bioaccumulate in the food chain, some EPA response will likely be required.

The description of the third study fails to indicate how the Draize test was modified and how the method employed differs from the standard test most commonly used. One study reported in the literature revealed a striking incidence of false negative reactions with several skin tests in current use. The difficulty with these tests is one of adequate contact between the test substance and the skin and adequate inclusion. Many substances,

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such as lanolin and some of the antiseptics used to preserve lotions and detergents, have been found to be sensitizers only during epidemiology studies.

Comment on the Draize Test

The Draize test for skin irritation consists of application of the suspected substance to the skin of rabbits to determine whether the material is an irritant. The test correlates well with the findings in humans. Rabbit skin develops redness and hardening which is similar to that in man and can be easily quantitated.

Three types of irritation are now recognized. (1) Ordinary irritation is defined as a dermatitis resulting from the contact with a chemical and which is not mediated by an immunological mechanism. Only the severest irritants give a reaction on the first exposure. (2) Chemicals may have a cumulative irritancy potential rather than single-exposure potential. Such cumulative irritancy is also nonimmunologically mediated. (3) Sensitization dermatitis may occur in situations where cumulative irritancy is present. Sensitization, however, requires the formation of antibodies and a subsequent immunological reaction. At the present time, contact dermatitis in the sense of sensitization is not as widely diagnosed. Most so-called contact dermatitis resulting from irritants and cosmetics does not have an immunological basis but is due to cumulative irritancy.

There is also a modified Draize test for sensitization. This requires repeated application of the compound to rabbits or guinea pigs with subsequent challenge. The correlation with human reactions is good, and the test has use as a predictor. The human sensitization assays are modifications of the guinea pig assay. All of these tests have an incidence of error, and many modifications exist which center around enhancing the test by first damaging the skin with such things as detergents.

Current Production and Use

The U.S. ITC identifies only one producer of FM BP4A; the recent "Bromine Based Fire Retardants" report identified three producers. Annual production may be of significance as the chemical is used as an intermediate for a good number of other flame retardants in addition to having fire retardant applications of its own. Reported flame retardant applications include use in paper, textiles, and many plastics and polymers (ABS, epoxy, polycarbonate, polyesters, polypropylene, polystyrene, etc.).

Comments/Recommendations

Several other submissions have concerned tetrabromobisphenol A or its derivatives (8EHQ-1277-0025; 8EHQ-0478-0130).

(a) This chemical was previously (8EHQ-0478-0116) recommended for a CHIP examination; the present notice supports that suggestion.

(b) In view of DHEW's policy requiring sufficient animal testing before a drug or other material can be used for human testing, the submitter should be asked to provide assurances that the investigating dermatologist was supplied with adequate animal data before the decision to conduct the human tests was made. In addition, the C.V. of the dermatologist should be supplied such that a determination of the investigator's fitness to make the decision that a chemical should or should not be tested on humans can be evaluated. This policy should be followed with respect to all 8(e) submissions concerning human studies. In addition, it may be wise to consider the inclusion of these points in any future clarification of the 8(e) Policy Statement.

(c) While the compound is fairly toxic to fish, the submitter has failed to provide the other information specified (for such submissions) in Part V(b)(3) of the March 16, 1978 Policy Statement (43 FR 11110). This states that reportable substantial risk information includes that which demonstrates "any non-trivial adverse effect...associated with a chemical known to have bioaccumulated to a pronounced degree or to be widespread in environmental media" (emphasis added). The submitter should therefore be asked to provide additional information supporting his contention that FM BP4A presents a substantial risk of injury to health or the environment.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: June 15, 1978 (Revised May 10, 1979) Approved__________

SUBJECT: Status Report 8EHQ-0578-0143

Revision
Needed __________

FROM: Joseph J. Merenda, Acting Director
Assessment Division, OTE/OTS (TS-792)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTE/OTS (TS-792)

Submission Description

Acute rat inhalation toxicity study of the monopropanol ester of tetrabromophthalic anhydride.

Submission Evaluation

Several problems were evident in the experimental protocols: use of calculated exposure concentrations rather than analytically determined values; inadequate number of experimental animals; lack of gross or histopathology.

Dyspnea was observed in the female rats after 10 minutes and in all rats after 20 minutes; however, after 30 minutes a few of the animals had an increased respiratory rate. The submitter should address the following questions: are females more sensitive, and if so, why; is the dyspnea a peripheral nervous system effect, a CNS effect, or is it due to secondary or local irritation; is the increased respiratory rate a second phase of the animals' response or is it due to anoxia caused by the dyspnea; etc.

Indications are that the compound is a histamine or other irritation transmitter releaser which could produce all the signs described in the toxicity report. The histamine release may be due to the esterified molecule or to the tetrabromophthalic acid released on hydrolysis. The toxicity of the molecule and tetrabromophthalic acid needs further investigation.

Current Production and Use

The material is apparently used as a flame retardant, although no specific information on production and uses is available. There is no entry in the TSCA Candidate List.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

Comments/Recommendations

This chemical may have some flame retardant applications; if so, it will be evaluated as part of the ongoing Assessment Division study of flame retardant technology.

(a) Section 8(b) data should be checked to determine commercial significance.

(b) This submission should be referred to the PBB workgroup.

(c) If the chemical appears commercially viable, it should be given CHIP and/or NIOSH/OSHA consideration.

(d) The submitter should be asked to support his contention that the information presented in this submission reasonably supports a conclusion of substantial risk.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: May 12, 1978 (Revised May 10, 1979) Approved__________

SUBJECT: Status Report 8EHQ-0578-0144

Revision
Needed __________

FROM: Frank D. Kover, Acting Director
Assessment Division, OTS (TS-792)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTS (TS-792)

Submission Description

Results of an acute oral toxicity study of CN-110-356 [O-methyl-O-((2-isopropylcarbonyl)-1-methylvinyl) thiophosphoryl benzamidine] in rats.

Submission Evaluation

CN-110-356 appears to be a malathion or parathion analog. It is also a phosphoramide. From its potency (LD_{50} = 10.8 mg/kg) and from the speed with which it is lethal, the compound appears to be an anticholinesterase substance. If, like parathion, sulfur is removed in the organism and replaced by oxygen, a more potent cholinesterase inhibitor will be produced. Female rats appear to be about twice as sensitive as male rats to the lethal action. A number of inadequacies were apparent in this report: there was no measure of the purity of the compound; body weight measurements should have been conducted on days 1, 2, and 3 in addition to days 7 and 14; no gross or histopathology was performed.

Current Production and Use

No information was located on the production and uses of this chemical, nor was there an entry in the TSCA Candidate List.

Comments/Recommendations

(a) The chemical name provided is somewhat unclear; the submitter should be asked to clarify the nomenclature and provide a drawing of the molecular structure. Use information would also be of value.

(b) 8(b) data should be checked for evidence of commercial significance

(c) This material may be a pesticide-related product; refer to OPP.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: May 11, 1978 (Revised May 10, 1979) Approved____________

SUBJECT: Status Report 8EHQ-0578-0145 Revision Needed ____________

FROM: Frank D. Kover, Acting Director
Assessment Division, OTS (TS-792)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTS (TS-792)

Submission Description

Results of a modified Draize multiple insult test in humans with MC-948 [bis(tribromoneopentyl) pentaerythritol cyclic diphosphate; also known as VC-948].

Submission Evaluation

The tested material does not appear to be a sensitizing substance by current definitions, nor is it a strong irritant. However, it would be useful to know which subjects had a + reaction and which had a definite 1+ irritant response. The current thinking among experimental dermatologists is that cumulative irritation potential is a significant reaction even though no sensitization occurs. Only severe irritants provoke a nonimmunological reaction on short application. On what day did the 1+ irritant response occur in subjects? It is becoming recognized that such short-term tests yield a high incidence of false negative results and therefore are not accurate predictors of irritant or sensitization reactions in a mass population where even an incidence of 0.25 or 0.5% becomes highly significant.

Current Production and Use

No information is available on the production and use of MC-948, neither is it entered in the TSCA Candidate List.

Comments/Recommendations

Several other submissions have been received on this chemical (8EHQ-0278-0060; 8EHQ-0278-0071; 8EHQ-0378-0092; 8EHQ-0378-0098).

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

(a) Section 8(b) data should be checked for evidence of commercial significance.

(b) If commercially viable, MC-948 may be a candidate for CHIP and/or NIOSH/OSHA consideration.

(c) The submitter should be asked to support his contention that the information presented in this submission reasonably supports a conclusion of substantial risk.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: June 14, 1978 Approved ___________

SUBJECT: Status Report 8EHQ-0578-0146

Revision Needed ___________

FROM: Joseph J. Merenda, Acting Director
Assessment Division, OTE/OTS (TS-792)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTE/OTS (TS-792)

Submission Description

Report describing health complaints voiced by construction workers at a chemical plant in Louisiana. The workers were reportedly exposed to a variety of airborne chemicals including chlorine gas, trichloroethylene, perchloroethylene, hydrogen chloride, and sulfur monochloride (possibly also acrolein, diammonium phosphate, and various hydrocarbons). The workers' complaints included loss of taste and smell, muscle weakness, various neurological disorders, fatigue, and other health problems.

Submission Evaluation

Acrolein as well as all of the chemicals listed in the table on p. 2 of the submission are well-established respiratory irritants. The chlorinated hydrocarbons are also neurotoxins. No data relating to intensity and duration of possible exposure to these chemicals are submitted. Therefore, it is not possible to even guess whether the complaints are related to these compounds.

Current Production and Use

All of the chemicals listed in the submission are relatively high-volume industrial materials. The submitter's Louisiana plant reportedly produces chlorine, perchloroethylene, sodium chlorate, sodium hydroxide, sulfur monochloride, 1,1,2,2-tetrachloroethane, and trichloroethylene.

Related Past and Present Activities

A hazard assessment on trichloroethylene and perchloroethylene is currently underway in the Assessment Division; a CHIP report on acrolein is also available.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

Comments/Recommendations

The submission notes that medical reports on the exposed workers are available; these should be requested from the submitter.

This information as well as any developed subsequently should be referred to NIOSH and OSHA for appropriate follow-up.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: June 22, 1978

Approved ____________

SUBJECT: Status Report 8EHQ-0578-0147

Revision
Needed ____________

FROM: Joseph J. Merenda, Acting Director
Assessment Division, OTE/OTS (TS-792)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTE/OTS (TS-792)

Submission Description

Letter reporting chlorinated hydrocarbon contamination of ground water and one drinking water well near a chemical plant in Michigan. Identified ground water contaminants are: hexachlorocyclopentadiene, hexachlorobenzene, hexachlorobutadiene, octachlorocyclopentadiene, chloroform, carbon tetrachloride, trichloroethylene, and perchloroethylene. The last four compounds listed, but not the others, were found in the well water.

Submission Evaluation

Contamination levels were not stated; therefore, no evaluation of the hazard is possible. The chemicals involved in the contamination problem are known human health hazards and some are included in EPA drinking water standards. The submitter claims to have alerted state and EPA regional authorities of the situation and are apparently working with them. The notice includes an offer to provide OTS with results of the analytical work and copies of the reports previously sent to the Michigan Department of Natural Resources.

Current Production and Use

Several of the chemicals are high-volume industrial products (trichloroethylene, perchloroethylene, carbon tetrachloride, hexachlorocyclopentadiene, and chloroform). Others are mainly chemical waste products (hexachlorobenzene, hexachlorobutadiene, and octachlorocyclopentadiene).

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

Related Past and Present Activities

All of these chemicals have been examined in the Office of Toxic Substances at one time or another. Among those under current investigation are trichloroethylene, perchloroethylene, hexachlorobenzene, and chloroform. ORD is investigating hexachlorocyclopentadiene.

Comments/Recommendations

(a) The reports noted in the evaluation section should be requested from the submitter.

(b) A copy of this notice should be sent to EPA Region V and Michigan DNR with a request that they confirm the situation as presented by the submitter. Any additional actions required to resolve the matter should be identified by DNR and Region V.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: June 23, 1978

Approved __________

SUBJECT: Status Report 8EHQ-0578-0148

Revision Needed __________

FROM: Joseph J. Merenda, Acting Director
Assessment Division, OTE/OTS (TS-792)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTE/OTS (TS-792)

Submission Description

A letter summarizing the results of a series of mouse skin-painting studies conducted in the 1960's using certain hydrotreated paraffinic distillate fractions.

Submission Evaluation

The submission per se is inadequate because it lacks the following information: complete copy of the final report submitted by the conducting lab; adequate analytical identification of the material tested (including boiling point, viscosity, major components, and manufacturing process).

The submission notes that manufacture of these distillate fractions via the hydrotreating process was halted in August 1977. Presumably, these materials are no longer in use; therefore, these studies are of limited relevance in the present context. It is important that toxicity studies be conducted on the materials currently in use (i.e., solvent extraction or a combination of solvent extraction and hydrotreating).

Current Production and Use

Insufficient information is provided to permit a determination of the current production and use of these materials.

Comments/Recommendations

Several other submissions have reported the results of skin-painting studies with petroleum fractions (8EHQ-1277-0026C; 8EHQ-0178-0029; 8EHQ-0178-0030; 8EHQ-0278-0044; 8EHQ-0478-0117; 8EHQ-0578-0140).

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

(a) This information should be referred to NIOSH and OSHA as most exposure to these products is occupational in nature.

(b) The inadequacies noted in the evaluation section should be rectified via a follow-up to the submitter. The availability of toxicity data on the currently produced fractions should also be determined. In addition, a description of the uses of these petroleum fractions should be requested in the follow-up letter.

(c) Section 8(b) data should be checked to determine if other producers are currently manufacturing similar petroleum fractions (based on the CAS numbers provided).

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE:	June 15, 1978	Approved	____________
SUBJECT:	Status Report 8EHQ-0578-0149	Revision Needed	____________

FROM: Joseph J. Merenda, Acting Director
Assessment Division, OTE/OTS (TS-792)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTE/OTS (TS-792)

Submission Description

The submission consists of the results of a medical review conducted on employees who were accidentally exposed to methyl mercaptan, dimethyl disulfide, and acetonitrile. The submitter notes that the health effects which occurred in this incident can be adequately explained by the well-known toxicity of methyl mercaptan. The submitter's particular concern in this matter is the apparent lack of sufficient odor or irritation to serve as an adequate warning of the presence of these toxic materials.

Submission Evaluation

Methyl mercaptan is a known poison with the ability to provoke CNS and local respiratory stimulant and irritant actions. Acetonitrile releases cyanide in the body. The victims had classical signs of some degree of edema of the lungs, and their response to medical treatment tends to confirm this. The florid color of the skin was probably due to widening of the arteries in the skin by acetonitrile or the cyanide present in the blood. Some of the laboratory findings concerning blood counts and electrolytes are traceable in part to the administration of diuretics and corticosteroids.

With respect to the workers' lack of adequate sensory warning, the explanation may possibly include sensory (especially olfactory) fatigue such that the sensing organs failed to indicate the greater concentrations. This is known to happen with hydrogen sulfide when the perceived odor of the gas is about as strong with nearly harmless concentrations as with those that would be very dangerous. Because of this, the use of some type of warning device may be indicated; e.g., lead or silver paper may be sufficiently sensitive to these agents to blacken upon exposure. OSHA and NIOSH may want to consider looking into this.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

Current Production and Use

The annual production of acetonitrile is estimated to be greater than 135 million pounds. The production of dimethyl disulfide is not known, whereas methyl mercaptan is reportedly produced in quantities greater than 1,000 pounds per year. Acetonitrile is used as a solvent in hydrocarbon extraction processes and as a starting material for acetophenone, naphthaleneacetic acid, thiamine, acetamine, vitamin B_1, substituted pyrimidines, and various pharmaceuticals. Methyl mercaptan is used as an intermediate in the production of methionine, jet fuel additives, and fungicides; it is also used as a catalyst. While the annual production and uses of dimethyl disulfide are not known, it is contained in the TSCA Candidate List.

Comments/Recommendations

This information should be transmitted to NIOSH and OSHA with the suggestion that they initiate appropriate followups.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: June 15, 1978

SUBJECT: Status Report 8EHQ-0578-0150

Approved ____________

Revision Needed ____________

FROM: Joseph J. Merenda, Acting Director
Assessment Division, OTE/OTS (TS-792)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTE/OTS (TS-792)

Submission Description

The submission consists of two studies: (a) an estimation of the carcinogenicity and mutagenicity of some arsenic and cadmium compounds in rats and (b) an evaluation of the impact of mining/smelting effluents on aquatic organisms.

Submission Evaluation

(a) In this chromosomal aberration test, a number of compounds were evaluated by injecting 10 rats i.p. and examining 25 bone marrow metaphases per animal after varying periods of treatment. The significant observation concerned the number of metaphases with a gap or a break. The experimenter found that cacodylic acid (dimethylarsinic acid), methylarsenic acid, and cadmium oxide were positive mutagens. The statistical test used, chi square, is validly applied. However, in this case, the power of the chi square test is low. This type of experiment should be performed so that one could use an analysis of variance or a T test in order to increase the power of the statistical test. Some indication of the variability found in the control values would have been desirable; this could have taken the form of either historical values or the use of a number of different control groups in the experiment (some rat strains give more variable chromosomal aberration frequencies than others). The three chemicals which gave positive results are very likely mutagenic; however, the reported negative values are viewed with less confidence for the reasons outlined above. Both the 7 and 30-day studies lack positive and negative controls. The conducting investigator should also be identified (at least by company affiliation).

(b) The effects of calcium sulfate exposure on rainbow trout eggs and fry were investigated. Sulfate is a major constituent of mining/smelting effluents, ranging in concentrations from

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*NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

540-700 mg/l. The test was adequately conducted, however, some information is lacking. Two controls were employed: one for hardness using calcium chloride and the other as diluent water only. No information on fry survival was presented for the diluent water control. This is important information to have for comparative purposes. There appeared to be no difference in results between the treated groups and the hardness control groups; nonetheless, the analyses and outcome of the statistical tests supposedly conducted should have been presented. Sulfate does not appear to pose much of a problem to rainbow trout eggs and fry, even at concentrations as high as 732 mg/l.

Current Production and Use

No information on the annual production of cacodylic acid, methylarsenic acid, and cadmium oxide was located. Cacodylic acid and methylarsenic acid are used in the production of various pesticides. Electroplating, manufacture of cadmium electrodes for alkaline storage batteries, and the synthesis of other cadmium salts are the major uses of cadmium oxide.

Related Past and Present Activities

Phase I documents on arsenic and cadmium are currently in preparation.

Comments/Recommendations

a) The comments found in the evaluation section on the statistical method should be transmitted to the submitter for possible reconsideration of the approach used. The lack of controls in the study should be noted as a deficiency as should the anonymity of the investigator.

b) On the basis of this cursory review, the second study does not appear to reasonably support the conclusion that calcium sulfate poses a substantial risk to the environment. Perhaps EPA should ask for additional documentation, if available, to support the suggestion that sulfates pose a substantial risk to rainbow trout.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: June 14, 1978

SUBJECT: Status Report 8EHQ-0578-0151

Approved ____________

Revision
Needed ____________

JM 6/20/78

FROM: Joseph J. Merenda, Acting Director
Assessment Division, OTE/OTS (TS-792)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTE/OTS (TS-792)

Submission Description

The submission consists of several reports investigating the acute toxicity of various chromium compounds, including sodium bichromate crystals, sodium bichromate 69% liquid, sodium chromate crystals, and chromic acid (chromium trioxide). The submission also included the results of a rabbit eye irritation test conducted with a 27.5% solution of hydrogen peroxide.

Submission Evaluation

The chromate toxicity studies do not significantly alter the descriptions of the toxicological effects already reported for chromates in the literature. The studies do, however, expand the amount of information obtained by current toxicity test methods, particularly the acute dermal toxicity in rabbits. Preventive measures for workers exposed to chromates have been described.

It has long been known that concentrated solutions of hydrogen peroxide (approximately 30%) are highly corrosive and irritating to body tissues. Such solutions can explode on contact with contaminants such as iron, copper, other heavy metals, or organic matter.

Current Production and Use

Annual domestic production of sodium bichromate, dihydrate is estimated at 314 million lbs. Sodium bichromate, dihydrate is generally produced from sodium chromate, decahydrate by the action of sulfuric acid. The annual production of chromic acid is estimated at 60 million lbs. Sodium chromate is used in inks, dyeing, paint pigments, leather tanning, production of other chromates, corrosion inhibition, and wood preservation. Sodium bichromate, dihydrate is used as a chemical reactant for oxidation reactions, production of chromic acid, corrosion inhibitor, pigment manufacture, leather tanning, electroplating, textile mordant, defoliating agent, catalyst, and wood preservative. Chromic acid is

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*NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

used in the production of various chemicals (chromates, oxidizing agents, catalysts), chromium plating, intermediate, process engraving, ceramic glazes, colored glass, metal cleaning, inks, tanning, paints, and textile mordant.

Domestic production of hydrogen peroxide is estimated at 180 million lbs. yearly and its uses include: bleaching and deodorizing of textiles, wood pulp, hair, fur, etc.; source of organic and inorganic peroxides; pulp and paper industry; plasticizers; rocket fuel; foam rubber; dyeing; antiseptic; chemical reagent; etc.

Related Past and Present Activities

A phase one document on chromium and its compounds is being prepared by the Assessment Division. Many other publications on chromium or its compounds are also available.

Comments/Recommendations

One other submission has been received on chromium compounds (8EHQ-0378-0096).

a) A copy of the chromium information contained in this submission should be entered in the Assessment Division's chromium file for possible inclusion in future reports.

b) This submission should be forwarded to NIOSH, OSHA, CPSC, and FDA for follow-up as needed.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: June 14, 1978

Approved ______

SUBJECT: Status Report 8EHQ-0578-0152

Revision
Needed ______

FROM: Joseph J. Merenda, Acting Director
Assessment Division, OTE/OTS (TS-792)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTE/OTS (TS-792)

Submission Description

The submission consists of the results of several intact animal studies conducted with CR141 [1,5,9-tris(N,N'-dibutyl-N,N'-bis(2,2,6,6-tetramethylpiperid-4-yl)-4,6-diamino-1,3,5-triazine-2-yl)-1,5,9-triazanonane].

Submission Evaluation

The laboratory investigations indicate that CR141 produced (a) severe irreversible injury to the eye mucosa of rabbits; (b) slight erythema and edema on skin application in rabbits; and (c) equivocal sensitization in guinea pigs. It was also highly irritating to the respiratory tract when administered by inhalation to rats.

CR141 appears to be a solid with some degree of water solubility. The significance of the low degree of primary irritation in rabbits does not necessarily indicate that the material will fail to produce cumulative skin irritation in humans. The sensitization test is equivocal because some of the guinea pigs died during the test period. The report indicates that several of the guinea pigs were thought to have an "enteric (intestinal) infection"; if this is true, the animals should not have been used in this test. Nonetheless, the guinea pigs would have shown signs of diarrhea before the tests were initiated. The observed diarrhea can just as well be interpreted to indicate some autonomic nervous system effects occurring during a type of allergic sensitization.

Current Production and Use

The submitter reports that they imported less than 100,000 pounds of CR141 in 1977 from an Italian chemical concern. It is reportedly used as a stabilizer in polypropylene polymers, although the submitter reportedly no longer uses CR141.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

Comments/Recommendations

(a) Section 8(b) data should be checked to determine evidence of the commercial significance of this material.

(b) If the importation or production of CR141 is sufficiently great, consideration should be given to a CHIP examination of the material.

(c) This information as well as any developed in the future should be forwarded to NIOSH and OSHA for appropriate follow-up.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: 15 JUN 1978

SUBJECT: Status Report* 8EHQ-0578-0153S

FROM: Frank D. Kover
Assessment Division, OTE/OTS

TO: Joseph J. Merenda, Director
Assessment Division, OTE/OTS

Approved ______

Revision Needed ______

Submission Description

Results of rabbit acute dermal toxicity studies on 2-amino-2,4-dimethyl pentanenitrile.

Submission Evaluation

This compound has two potential toxicities:

1) Release of cyanide in the body following degradation by tissue enzymes;

2) A possible lathyrogen (toxic agents associated structurally with natural products found in seeds produced by members of the pea family) which can either (a) cause degeneration of the spinal cord and cerebellar nerve cells to produce paralysis or (b) interfere with the final stages of collagen synthesis, particularly in the skin.

It would be interesting to describe the cause of death in the rabbits who received this compound via skin application as this may shed some light on the actual mode of toxic action.

Current Production and Use

No information was located on the production and uses of 2-amino-2,4-dimethyl pentanenitrile; neither was there an entry in the TSCA Candidate List.

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Comments/Recommendations

a) The submitter should be asked to amplify his contention that this information is indicative of substantial risk. The March 16 Policy Statement emphasizes that previously unknown effects occurring during a routine LD_{50} assay may have to be reported if they are of possible concern to the Agency. In this case, the submitter fails to describe the mode of action of this compound, therefore, the only effect reported is death. The submitter should be asked to describe the cause of death (in both gross and histopathological terms) in the test rabbits.

b) This information should be transmitted to NIOSH, OSHA and FDA.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: June 20, 1978

SUBJECT: Status Report 8EHQ-0578-0154P

Approved ____________

Revision Needed ____________

JM 6/29/78

FROM: Joseph J. Merenda, Acting Director
Assessment Division, OTE/OTS (TS-792)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTE/OTS (TS-792)

Submission Description

The submission reports an employee fatality attributed to dermal exposure to molten (58°C) monochloroacetic acid.

Submission Evaluation

Monochloroacetic acid has two lethal toxic effects:

1) pulmonary edema by direct inhalation or damage to the air sacs by delivery to them via the blood following skin absorption;

2) interference with the aerobic oxidation of glucose by muscle and brain tissue.

The fatality reported in this submission appears to have been due to alveolar (lung) injury following skin absorption. However, there is a possibility that the molten acid had sufficient hydrochloric acid and acetic acid to have produced injury by inhalation. One question that should be answered is: how resistant is the molten acid to decomposition during normal working conditions?

Current Production and Use

Estimated 1974 consumption of monochloroacetic acid totaled 95 million lbs. The consumption pattern was approximately as follows: 52 million lbs. used in the production of herbicides (e.g., 2,4-D and 2,4,5-T); 33 million lbs. used to manufacture sodium carboxymethylcellulose; and 10 million lbs. for miscellaneous uses (production of glycine thioglycolic acid, pharmaceuticals, indigo dyes, ethyl chloroacetate, synthetic caffeine, sarcosine, and EDTA).

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Comments/Recommendations

a) The comments and questions raised in the evaluation section should be brought to the attention of the submitter. In addition, the submitter notes that additional lab work is being conducted to investigate the mechanism of death following skin absorption and also to determine an antidote. EPA should request that this information be supplied as it is developed.

b) This information should be transmitted to NIOSH and OSHA.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: June 20, 1978 (Revised May 10, 1979) Approved ____________

SUBJECT: Status Report 8EHQ-0578-0155 Revision Needed ____________

FROM: Joseph J. Merenda, Acting Director
Assessment Division, OTE/OTS (TS-792)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTE/OTS (TS-792)

Submission Description

Results of an acute intravenous study of tunicamycin in mice.

Submission Evaluation

The structure of tunicamycin suggests that it is a glycopeptide type of antibiotic. Such antibiotics are highly toxic to cells and are used in the treatment of cancer. This antibiotic does not appear to offer any greater hazard than those already in common use for similar purposes.

Current Production and Use

No information is available.

Comments/Recommendations

This submission apparently describes the results of acute toxicity testing on an R&D chemical which presumably has very limited environmental release.

The submitter should be asked to provide a more complete description of the experimental protocols as well as the experimental results (particularly pathology). The submitter should also be asked to support his contention that the information presented in this submission reasonably supports a conclusion of substantial risk.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: June 21, 1978 (Revised May 10, 1979) Approved__________

SUBJECT: Status Report 8EHQ-0578-0156

Revision
Needed __________

FROM: Joseph J. Merenda, Acting Director
Assessment Division, OTE/OTS (TS-792)

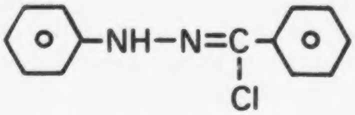
TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTE/OTS (TS-792)

Submission Description

Results of topical sensitization studies of benzoyl chloride, phenyl hydrazone in guinea pigs.

Submission Evaluation

Compounds of this chemical structure (see below) could be allergenic on two acacounts: the hydrazino structure; or the chlorine attached to the carbon that is double bonded to nitrogen could react with sulfhydryl groups, particularly in the skin, and thereby form a haptene which may induce antibody formation.



benzoyl chloride, phenyl hydrazone

Current Production and Use

No information is available.

Comments/Recommendations

This submission apparently refers to an R&D chemical which presumably has limited environmental release.

(a) The submitter should be asked to provide a more complete description of the experimental protocols and the method of evaluation.

(b) The submitter should be asked to support his contention that the information presented in this submission reasonably supports a conclusion of substantial risk.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: June 20, 1978

Approved ____________

SUBJECT: Status Report 8EHQ-0578-0157

Revision Needed ____________

FROM: Joseph J. Merenda, Acting Director
Assessment Division, OTE/OTS (TS-792)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTE/OTS (TS-792)

Submission Description

Reports that intravenous doses of less than 1 mg/kg of 6,9-diamino-1-(6-amino-9H-purin-9-yl)-1,5,6,7,8,9-hexadeoxy-D-ribo-decofuranuronic acid caused nephrosis (degeneration of the renal tubules) in dogs.

Submission Evaluation

This compound is both a purine analog and a glycol derivative. Purine analogs are used to treat gout and cancer. It is difficult to determine the exact cause of the nephrosis since both glycol and purine derivatives have been reported to have this effect. The major hazards with this fermentation product are its production and disposition. This material, however, appears to present no greater hazard than that encountered with similar antibiotics used in the treatment of cancer.

Current Production and Use

No information is available.

Comments/Recommendations

This submission apparently refers to an R&D chemical which presumably has limited environmental release.

The submitter should be asked to provide a more complete description of the experimental protocols employed in this study. The submitter should also be asked to support his contention that the information presented in this submission reasonably supports a conclusion of substantial risk.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: June 22, 1978 (Revised May 10, 1979) Approved___________

SUBJECT: Status Report 8EHQ-0578-0158S

Revision
Needed ___________

FROM: Joseph J. Merenda, Acting Director
Assessment Division, OTE/OTS (TS-792)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTE/OTS (TS-792)

Submission Description

Acute toxicity studies of 3(alpha-methylstyryl)-1,2,4-thiadiazole in rabbits.

Submission Evaluation

This thiadiazole derivative is both highly irritating and toxic by absorption through the skin. The present state of product development as described by the submitter does not indicate a need for further EPA action. If additional developmental work suggests widespread usage, acute and subchronic toxicity studies including pathological examination of significant organs should be requested, as should carcinogenicity testing.

Current Production and Use

No information was located in secondary sources; however, the submitter notes that the material is presently undergoing laboratory-scale synthesis and testing only.

Comments/Recommendations

The submission apparently refers to an R&D chemical which presumably has limited current environmental release.

(a) The submitter should be asked to provide a more complete description of the experimental protocols and results.

(b) The submitter should be asked to support his contention that the information presented in this submission reasonably supports a conclusion of substantial risk.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: June 19, 1978 (Revised May 10, 1979) Approved ____________

SUBJECT: Status Report 8EHQ-0578-0159S Revision Needed ____________

FROM: Joseph J. Merenda, Acting Director
Assessment Division, OTE/OTS (TS-792)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTE/OTS (TS-792)

Submission Description

An acute oral toxicity study of 2-N(2,2,3,3-tetrafluoropropyl-1-amide)-4-trifluoromethyl-6-nitroaniline in rats.

Submission Evaluation

This compound is highly toxic. It is both a fluorourethane and a nitroaniline, both of which are potentially highly toxic. Many urethanes are cholinesterase inhibitors. A possible metabolite of this compound, tetrafluoropropionic acid, could conceivably be very toxic by virtue of its interfering with carboxylic acid metabolism in normal metabolic cycles. The fluoronitroaniline moiety could be a potent hemoglobin and bone marrow poison. It would therefore be useful to have more information as to the cause of death observed with this compound. This material also has potential for producing primary, cumulative, and sensitization skin reactions.

Current Production and Use

No information was located; however, the submitter notes that the material is currently undergoing laboratory-scale synthesis and testing.

Comments/Recommendations

The submission apparently refers to an R&D chemical which presumably has limited environmental release.

The submitter should be asked to provide a more complete description of experimental protocols and results. Of particular interest would be the results of any gross or histopathology conducted on the test animals. The submitter should also be asked to support his contention that the information presented in this submission reasonably supports a conclusion of substantial risk.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: June 22, 1978 (Revised May 10, 1979) Approved_____________

SUBJECT: Status Report 8EHQ-0578-0160S

Revision Needed _____________

FROM: Joseph J. Merenda, Acting Director
Assessment Division, OTE/OTS (TS-792)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTE/OTS (TS-792)

Submission Description

Results of a study which found testicular atrophy in rats, but not mice, following 90 days of dietary administration of 1(2,6-dichlorobenzoyl)-3-(5-(4-bromophenyl)-6-methyl-2-pyrazinyl) urea.

Submission Evaluation

It is difficult to evaluate the significance of the testicular atrophy which occurred in the rats. This could be a direct effect on the testis or an effect on the neuroendocrine system, particularly the anterior pituitary. It would be useful to have a description of the pathological changes that were produced in various organs, especially the thymus, adrenals, and both anterior and posterior pituitary glands. Acute toxicity data would also be useful if such were obtained.

Current Production and Use

No information was located in the secondary sources consulted; however, the submitter notes that the material is currently undergoing laboratory-scale synthesis only.

Comments/Recommendations

The submission apparently refers to an R&D chemical which presumably has limited environmental release.

(a) The submitter should be asked to provide a more complete description of experimental protocols and results, especially the areas outlined in the evaluation section above.

(b) The submitter should be asked to support his contention that the information presented in this submission reasonably supports a conclusion of substantial risk.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: June 19, 1978 (Revised May 10, 1979)   Approved __________

SUBJECT: Status Report 8EHQ-0578-0161S

Revision Needed __________

FROM: Joseph J. Merenda, Acting Director
Assessment Division, OTE/OTS (TS-792)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTE/OTS (TS-792)

Submission Description

The study reporting severe neutropenia (bone marrow damage) in dogs after oral dosing with 2-ethyl-7-fluoro-4-(4-methyl-1-perazinyl)10H-thieno (2,3-b)(1,5)benzodiazepine.

Submission Evaluation

This compound belongs to the Librium and Valium class of minor tranquilizers and sleep-producing drugs. Specifically, it most closely resembles flurazepam.

The test compound is a powerful bone marrow poison. It is unusual for an organic compound to produce bone marrow injury in experimental animals, even when such compounds are known to do so in humans.

Current Production and Use

No information was located in the secondary sources; however, the submitter notes that laboratory-scale synthesis and testing of the material have been discontinued.

Comments/Recommendations

This submission apparently refers to an R&D chemical which presumably has limited environmental release.

(a) The submitter should be asked to provide a more complete description of the experimental protocols and the results.

(b) The submitter should be asked to support his contention that the information presented in this submission reasonably supports a conclusion of substantial risk.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: June 15, 1978

SUBJECT: Status Report 8EHQ-0578-0162S

JM 6/21/78

FROM: Joseph J. Merenda, Acting Director
Assessment Division, OTE/OTS (TS-792)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTE/OTS (TS-792)

Approved ____________

Revision
Needed ____________

Submission Description

The results of acute toxicity studies with N-(2,4-dinitro-6-(trifluoromethyl)phenyl)-N-methyl-2,4,6-tribromobenzenamine in rats, mice, cats, and dogs.

Submission Evaluation

This material is a highly toxic compound for three of the four species tested. The lesser toxicity in cats suggests that liver enzyme activation is involved in the toxic action. The human liver responds more like the dog liver in attacking foreign compounds.

This compound is both a tribromoaniline and a dinitroaniline. The 2,4-dinitro group tends to uncouple phosphorylation and cause rapid oxidation of fat thereby raising the body temperature towards the lethal point of 110°F. The trifluoromethyl group is introduced into drug molecules to increase potency several fold.

It would be valuable to have a discussion of the effects exhibited by the test animals just before death. Was methemoglobinemia involved or were there central nervous system effects?

Current Production and Use

No information was located on the current production and uses of this compound; it is likely to be an R&D chemical.

Comments/Recommendations

The suitability of submissions such as this is somewhat questionable. Acute toxicity data on R&D chemicals which presumably have very limited exposure do not appear to be sufficient to indicate that the material poses a substantial risk to health or the environment. A more appropriate mechanism than section 8(e) for the dissemination of information such as

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***NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.**

EPA FORM 1320-6 (REV. 3-76)

this may be the publication of a yearly summary article in a scientific publication or a letter to the editor of one of the more popular trade journals. It would appear that the only people having an interest in information such as is contained in submissions of this sort would be bench R&D chemists or the academic community.

a) The submitter should be asked to provide a more complete description of the experimental protocols as well as the experimental results (particularly gross pathology).

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: June 28, 1978 (Revised May 10, 1979) Approved______________

SUBJECT: Status Report 8EHQ-0578-0163 Revision Needed ______________

FROM: Joseph J. Merenda, Director
Assessment Division, OTE/OTS (TS-792)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTE/OTS (TS-792)

Submission Description

Results of an acute inhalation toxicity study of N,N'-dibutyl-1,6-hexanediamine in rats.

Submission Evaluation

The compound has been shown in the past to be corrosive to skin and to have fairly high acute toxicity by the oral and dermal routes. The 4-hour LC_{50} of N,N'-dibutyl-1,6-hexanediamine (mixed with 20 mole percent of the monobutyl form) was 23 ppm in rats under the conditions of this study.

Current Production and Use

No information was located on the production and use of this material, nor is it entered on the TSCA Candidate List. In the submission, the notifier indicates that his company does not make this chemical, but purchases it for use as a polymer intermediate. It is also claimed that in the final product the material is chemically bound in the polymer.

Related Past and Present Activities

A CHIP report on diaminohexane is available from the Assessment Division.

Comments/Recommendations

This submission is apparently an example of the situation in which the submitter is a processor who is reporting substantial risk information on a chemical produced by another manufacturer.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

(a) Section 8(b) data should be checked for evidence of the chemical's commercial significance.

(b) If the chemical is commercially viable, a CHIP investigation should be considered; it should, however, be confined to preparation of information supplemental to that found previously for diaminohexane.

(c) This submission should be referred to NIOSH and OSHA for their information.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: June 22, 1978

Approved ____________

SUBJECT: Status Report 8EHQ-0578-0164

Revision
Needed ____________

FROM: Joseph J. Merenda, Acting Director
Assessment Division, OTE/OTS (TS-792)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTE/OTS (TS-792)

Submission Description

Results of toxicity testing on N-(4,6-dichloro-s-triazin-2-yl)sulfanilic acid, monosodium salt (Sandospace-R Paste) The submission covered a 48-hour patch test and a mutagenicity screen on the material.

Submission Evaluation

Delayed reactions to some skin irritants and sensitizers, while infrequent, are not unknown phenomena. Perhaps a more detailed description of the technique used in applying Sandospace-R Paste to the skin might be helpful in evaluating the reaction.

In the case of the mutagenicity testing, insufficient information was provided to permit an evaluation.

Current Production and Use

No information on the production and uses of Sandospace-R Paste was located, nor was there an entry in the TSCA Candidate List. The submitter reports that Sandospace-R was used in development (product R&D), but that it is not in current use by the notifier. An address is provided for more detailed use information.

Comments/Recommendations

This submission is apparently an example of a situation in which the submitter is reporting substantial risk information on a chemical produced by another manufacturer.

(a) Section 8(b) data should be checked for evidence of commercial significance.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

(b) Complete copies of all reports referenced in this submission should be requested; use information should also be solicited at the address provided.

(c) This information should be transmitted to the appropriate agencies following receipt of the description of uses.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: June 29, 1978 (revised December 10, 1979)

SUBJECT: Status Report 8EHQ-0578-0165

Approved JM 2/13/80

Revision Needed ____________

FROM: Frank D. Kover, Chief
Chemical Hazard Identification Branch

TO: Joseph J. Merenda, Director
Assessment Division, OTE

Submission Description

The submission reports positive mutagenicity findings in several test systems with N-(2-methyl-2-nitro propyl)-4-nitrosoaniline. A positive response was observed in each of the following mutagencity assays: a microbial plate assay using a suspension system with metabolic activation; a mouse lymphoma cell assay with activation only; a DNA repair assay with hepatocyte cultures; a rat liver epithelial cell assay. The submitter also reported that in previously conducted 2-year feeding studies in rats and dogs, no lesions indicating carcinoma were observed. However, several of the rats developed a unique (though benign) lesion of the urinary bladder; because of these findings and the mutagenicity responses, the submitter initiated a 2-year chronic feeding study with the chemical in rats at the end of 1977. The submitting company also indicated that it does "not feel that this information comes within the reporting requirements in Section 8(e)."

Submission Evaluation

It is not surprising that the test chemical is a mutagen. It is a nitrosoaniline which can give rise to a hydroxylamine derivative of aniline which, therefore, places the chemical in the class of carcinogenic nitroanilines.

Current Production and Use

No information on production and use was located in the secondary literature, neither was there an entry in the TSCA Candidate List. The submitter reports that the subject chemical is used as a rubber additive and that it is manufactured in relatively small quantities.

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*NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

Comments/Recommendations

The submitter notes that purchasers of the chemical have been informed by letter of the results of his evaluation. In these letters, the submitter also suggests that users of the chemical adopt a worker exposure level of 0.2 mg/m^3.

Following a review of this submission, the Assessment Division has concluded that the information is of the type required for reporting under section 8(e). The basis for this conclusion is as follows:

> The preface to Part V of the March 16, 1978, section 8(e) policy statement (43 FR 11110) states that "a 'substantial risk of injury to health and the environment' is a risk of considerable concern because of (a) the seriousness of the effect...and (b) the fact or probability of its occurence." With regard to the seriousness of the effect, Part V of the policy statement goes on to explain that the Agency considers the effects for which substantial risk information must be reported to include "any pattern of effects or evidence which reasonably supports the conclusion that the chemical substance or mixture can produce ... mutation(s)." Information reporting this effect can be obtained either directly, by observation of its occurrence, or inferred from designed studies. According to Part VI(1) of the policy statement, designed controlled studies include *in vitro* and *in vivo* experiments and tests. When evaluating *in vitro* tests for submission, "consideration may be given to the existence of corroborative information, if necessary" to reasonably support a conclusion of substantial risk.

In the present case, the submitter reports that the chemical was positive in four mutagenicity assays and that a unique bladder lesion was seen in rats receiving the compound in the diet for 2 years. Only limited exposure information is available to the Agency; however, the submitter indicates that "a review of our manufacturing experience with N-(-2-methyl-2-nitropropyl)-4-nitrosoanilize has indicated the potential for skin sensitization with this compound." Thus, some exposure must occur during manufacture. In the Agency's view, when this suspected human exposure is considered with the evidence of mutagenicity in several *in vitro* tests and the reported induction of a unique lesion in a long-term rat feeding study, reasonable support for a conclusion of substantial risk is evident for this chemical.

(a) Section 8(b) data should be checked for evidence of commercial significance. If commercially viable, the substance should be considered for a CHIP investigation.

(b) This information should be transmitted to NIOSH and OSHA.

(c) Complete copies of all studies cited in the submission should be requested from the notifier. EPA should also ask to be kept abreast of the findings in the ongoing chronic feeding study

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: June 21, 1978

Approved ____________

SUBJECT: Status Report 8EHQ-0578-0167PS

Revision Needed ____________

FROM: Joseph J. Merenda, Acting Director
Assessment Division, OTE/OTS(TS-792)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTE/OTS (TS-792)

Submission Description

The submission describes a worker who developed a skin cancer reportedly following occupational exposure to a variety of metal salts including those of cobalt, nickel, lead, zinc, and copper. The submission goes on to note that the worker had previously been self-employed as a farmer.

Submission Evaluation

The individual discussed in this submission was exposed to the salts of several heavy metals, at least one of which (nickel) has been reported to be a carcinogen, although not by application to the skin. In most cases, such exposure usually results in a sensitization dermatitis. It is futile at this late date to attempt a determination as to the cause of the basal cell carcinoma without further data. If the subject's exposure was to micro-pulverized salts of these heavy metals, lung cancer might be expected.

Current Production and Use

Salts of the metals listed above are produced in large quantities annually for a variety of uses, including animal feed additive, dyeing mordant, explosives, tanning, electroplating, catalysts, etc.

Comments/Recommendations

This submission should be transmitted to NIOSH and OSHA for their information.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE:

SUBJECT: Status Report* 8EHQ-0578-0168

Approved ______________

Revision Needed ______________

FROM: Frank D. Kover
Assessment Division, OTE/OTS

TO: Joseph J. Merenda, Director
Assessment Division, OTE/OTS

Submission Description

The submission ostensibly consists of two epidemiologic studies conducted among workers employed by the submitter. The Agency, however, has received only a copy of the study by Milby and Hine entitled "A Study of Deaths from Respiratory Cancer Among Employees, Former Employees, and Retirees of the Kennecot Corporation." A second letter notes that a two phase study entitled "A Retrospective Epidemiological Study at Kennecott's Utah Smelter" was to be enclosed with the letter; however, the section 8(e) files do not include this study. Another copy of this report will be requested.

Submission Evaluation

On page one of their report, Milby and Hine state that "this is the third report in a series" of investigations; copies of the first two reports are needed to permit an adequate evaluation. The second letter refers to the two phases of a study performed by researchers from Brigham Young University (one of the phases was reportedly published); these studies, however, were not found in the section 8(e) files. When copies of all four additional reports have been received, a more informed judgment on the studies will be possible.

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*NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

With respect to the available Milby and Hine study, a great deal of attention has been paid in the report to nosology (the classification of diseases). Because the comparison data in the study are derived from U.S. Vital Statistics, the rules prepared by the National Center for Health Statistics (NCHS) should have been used for classifying certificates of death for members of the study group. These rules, with which every qualified nosologist is familiar, are available from NCHS.

Another major problem with the study is its proportional measure of risk. Because such measures involve only "numerator data," they are not preferred and are usually employed only as preliminary screens. The high proportion of respiratory cancer deaths among the fatalities at the Utah smelter warrants obtaining "denominators" in the form of person-years at risk. Expected deaths could then be generated by life-table methods and much more valid indicators of risk would result. The time following termination of employment should be included in the study.

In order to interpret the possible excess of respiratory cancers at the Utah smelter, it is essential that information on exposure which would differentiate that facility from the others examined in the study be included. Relevant information would include descriptions of production process, monitoring data, and duration of worker exposure.

Current Production and Use

The three production phases mentioned in the Milby and Hine study are common to most copper mining operations. The mining phase consists of blasting, loading, and hauling the ore. Concentration includes crushing, grinding, classification, flotation, and dewatering to increase the proportion of copper in the ore to 15-30%. At the smelting site, reverberatory furnaces and converters yield a copper of high purity which can be further refined and fabricated.

Comments/Recommendations

(a) This submission and status report should be referred to NIOSH and OSHA.

(b) The submitter should be asked to provide copies of the studies which are not available in the literature or in the section 8(e) files.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: June 28, 1978 (Revised May 10, 1979)

Approved ____________

SUBJECT: Status Report 8EHQ-0578-0169S

Revision Needed ____________

FROM: Frank D. Kover, Acting Chief
Chemical Hazard Identification Branch

TO: Joseph J. Merenda, Director
Assessment Division

Submission Description

Results of acute dermal toxicity studies of N-(2-chloroethyl)-N-ethylaniline in rabbits. The submission consists of essentially identical experiments performed by two different laboratories.

Submission Evaluation

N-(2-chloroethyl)-N-ethylaniline is a semi-nitrogen mustard compound. The signs observed in the dermally exposed rabbits are consistent with nitrogen mustard activity. The autopsy findings are also consistent. The emaciation and alopecia observed are reminiscent of the toxic effect seen in patients receiving nitrogen mustard for the treatment of cancer. This suggests that the compound may be an alkylating agent.

The first lab concluded that the material has a dermal LD_{50} of less than 200 mg/kg for male albino rabbits and that it is a corrosive material (as this term is defined by the Department of Transportation). The second lab, however, indicated that the compound has a dermal LD_{50} of 498 mg/kg for male albino rabbits and that it is not a corrosive material (as the term is defined by DOT). The different results obtained by the two testing facilities will have to be resolved. Perhaps they are merely quantitative and are based on variations in testing techniques or the expression of animal strain differences.

Current Production and Use

No published information is available on the production and uses of this material; however, it is listed in the TSCA Candidate List.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

Comments/Recommendations

(a) Section 8(b) data should be checked for evidence of commercial significance.

(b) The submitter should be asked to offer an explanation for the apparent disparity in test results evident in this submission.

(c) This information should be transmitted to NIOSH and OSHA for their information.

(d) The submitter should be asked to support his contention that the information provided in this submission reasonably supports a conclusion of substantial risk.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: June 28, 1978 Approved______________

SUBJECT: Status Report 8EHQ-0578-0170

Revision
Needed ______________

FROM: Joseph J. Merenda, Acting Director
Assessment Division, OTE/OTS (TS-792)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTE/OTS (TS-792)

Submission Description

Results of a 6-month industry-sponsored inhalation study of 2-nitropropane in rats. An earlier NIOSH-sponsored study conducted by the Huntingdon Laboratories found that exposure to 200 ppm of 2-nitropropane for 6 months resulted in massive liver damage and neoplastic changes in rats.

Submission Evaluation

The observation by Huntingdon Laboratories that 2-nitropropane can produce malignant changes in liver cells and that these metastasize to the lung has been confirmed in the present study conducted by the Albany Medical College.

The experimental design used at Huntingdon is disputed by Frederick Coulston, Ph. D., Albany Medical College, who claims to have corrected the flaws. However, neither experimental design has been submitted in detail. There may be merit to the reasons advanced by Coulston for his view that 2-nitropropane is not a primary carcinogen. Nonetheless, his opinion cannot be the sole basis for classifying this compound as being a nonprimary carcinogen in humans. The relevant slides of tissue sections and the experimental design will have to be examined by other experts. The course of regeneration in response to injury by liver cells may be different in humans than that observed in rats. This difference is notable in alcoholic cirrhosis in humans who develop liver cancer without necessarily sustaining the degree of injury postulated by Coulston. This issue can be resolved only by liver pathologists.

The argument advanced by Coulston that no cases of hepatic failure have been diagnosed in man during the past 30 years of 2-nitropropane's use is specious. Vinyl chloride was used for at least this length of time before the first vinyl chloride-related cancer was detected in humans.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

Current Production and Use

Thirty million pounds of 2-nitropropane are produced annually in the United States; 12 million pounds are sold domestically, and the remainder is used either internally by the producer or exported. 2-Nitropropane is used as a solvent for organic compounds, cellulose, esters, resins, gums, waxes, fats, dyes, inks, and chlorinated rubber. 2-Nitropropane is most often used to improve drying time, yield more complete solvent release, improve wetting ability, increase pigment dispersion, etc. The material's combustion properties have made it useful as a rocket propellant and as a gasoline and diesel fuel additive. It is also used as a paint and varnish remover (limited market) and as an intermediate in organic synthesis.

Related Past and Present Activities

A CHIP report on 2-nitropropane is available from the Assessment Division.

Comments/Recommendations

(a) A complete copy of the Albany Medical College study should be requested from the submitter; this should include a description of experimental protocols.

(b) The previously prepared CHIP report should be updated to reflect the new information.

(c) The submitter notes that additional studies on 2-nitropropane are currently being conducted; these should also be requested from the submitter when completed.

(d) NIOSH and OSHA should be informed of EPA's receipt of this information under Section 8(e) of TSCA; the CPSC should also receive a copy of this submission.

(e) It may be wise to consider other similar compounds (1-nitropropane, 2,2-dinitropropane, etc.) for possible CHIP examination.

(f) The chemical class nitroalkanes should be considered for possible Section 4 testing.

(g) It may also be advisable to initiate Section 8(d) rulemaking procedures on 2-nitropropane.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: June 21, 1978

Approved ____________

SUBJECT: Status Report 8EHQ-0678-0171

Revision Needed ____________

FROM: Joseph J. Merenda, Acting Director
Assessment Division, OTE/OTS (TS-792)

TO Warren R. Mui , Deputy Assistant Administrator
for Testing and Evaluation, OTE/OTS (TS-792)

Submission Description

The submission consists of two studies investigating the acute toxicity of tetrabromophthalic anhydride (FM PHT4) in rainbow trout and Daphnia (water flea).

Submission Evaluation

FM PHT4, of unknown purity, was studied in bioassay determinations of a 96-hour LC_{50} in rainbow trout and a 48-hour LC_{50} in Daphnia. The compound was apparently not soluble in water (however, no water solubility data were provided) because a solvent (acetone) carrier was required. In trout, no mortality was seen at concentrations up to 10 mg/l, but abnormal swimming behavior was noted at concentrations above 1 mg/l. Higher concentrations were not tested due to the solubility limitations of the compound in acetone. With Daphnia, no mortality or abnormal behavior was seen at test concentrations as high as 5.6 mg/l. DO and pH were within acceptable limits throughout the test. The submission is inadequate in several respects: no analytical determination of the purity of the test compound was provided; the study reported nominal concentrations based on calculations rather than concentrations actually measured in the test tanks; no water solubility data are provided, and therefore there is no indication as to whether FM PHT4 will end up in the water or the sediments. FM PHT4 appears to have limited biological activity based on the information contained in this report.

Current Production and Use

Annual production is not known; however, the U.S. ITC lists one producer, which implies an annual production of greater than 1,000 pounds. FM PHT4 is used as a flame retardant for plastics, paper, and textiles (polyesters).

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

Comments/Recommendations

FM PHT4 will be evaluated in the ongoing Assessment Division study of flame retardant technology. It is listed in the recent "Bromine Based Fire Retardants" report.

(a) The submitter should be asked to support his contention that the information contained in this notice is indicative of a substantial risk to the environment. The report in its present form offers no information to indicate that FM PHT4 represents a substantial risk.

(b) The submitter should be requested to provide the missing information noted in the evaluation section.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: June 21, 1978 (Revised May 10, 1979)

Approved ____________

SUBJECT: Status Report 8EHQ-0678-0172

Revision Needed ____________

FROM: Joseph J. Merenda, Acting Director
Assessment Division, OTE/OTS (TS-792)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTE/OTS (TS-792)

Submission Description

Acute toxicity studies of VEL 4441 [0-methyl-0-cis-(2-methoxycarbonyl-1-methylvinyl)-thiophosphoryl-N'N'-dimethylformamidine]. VEL 4441 is the cis form of CN-110-335, which is discussed in submission 8EHQ-0678-0175.

Submission Evaluation

The structural formula for this compound suggests that it is an insecticide related to parathion. The high toxicity suggests that the material is a very potent inhibitor of acetylcholinesterase. This degree of toxicity should probably require more elaborate LD_{50} determinations in a variety of species. It would be useful to have information on the anticholinesterase activity and the effects of atropine on the manifestations of toxicity produced by this chemical.

Insufficient numbers of animals were tested to reach any valid conclusions in this submission. In addition, no analytical data were provided.

Current Production and Use

No information on the production and use of this material was located, nor was there an entry in the TSCA Candidate List.

Comments/Recommendations

(a) The submitter should be asked to provide analytical data and the results of any gross or histopathology performed on the test animals. The submitter should also be queried as to plans for future testing as well as the contemplated uses of this material.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

(b) Section 8(b) data should be checked for evidence of commercial significance.

(c) This submission should be transmitted to OSHA, NIOSH, and OPP.

(d) The submitter should be asked to support his contention that the information presented in this submission reasonably supports a conclusion of substantial risk.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: June 21, 1978 (Revised May 10, 1979)

Approved ____________

SUBJECT: Status Report 8EHQ-0678-0173

Revision Needed ____________

FROM: Joseph J. Merenda, Acting Director
Assessment Division, OTE/OTS (TS-792)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTE/OTS (TS-792)

Submission Description

Results of a 42-day neurotoxicity study of MC 984 [bis(1,3-dichloro-2-propyl)-3-chloro-2,2-dibromomethyl-1-propyl phosphate; also known as VC 984] in adult chickens.

Submission Evaluation

Although MC 984 appears to be far less neurotoxic than triorthocresylphosphate, some observations need explanation. How much perivascular and interstitial lymphoid infiltration were seen in the brain, spinal cord, and sciatic nerves of the chickens receiving only the corn oil? Are there any data for food and water intake?

Current Production and Use

There is no information available on the production and use of this material. It is not contained in the TSCA Candidate List.

Comments/Recommendations

Many submissions have been received on this chemical (8EHQ-1277-0022; 8EHQ-0178-0033; 8EHQ-0278-0048; 8EHQ-0278-0049; 8EHQ-0278-0053; 8EHQ-0378-0100; 8EHQ-0378-0107; 8EHQ-0478-0136).

(a) Section 8(b) data should be checked to determine commercial significance.

(b) MC 984 may be a candidate for CHIP activities in light of the number of submissions received to date. It may be advisable to query the submitter about the possibility of additional future submissions on this chemical before CHIP activities commence.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

(c) The submitter should be asked to provide complete analytical data as well as answers to the questions posed in the evaluation section above. The submitter should also be asked to support his contention that the information presented in this submission reasonably supports a conclusion of substantial risk.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: June 20, 1978 (Revised May 10, 1979) Approved ____________

SUBJECT: Status Report 8EHQ-0678-0174

Revision Needed ____________

FROM: Joseph J. Merenda, Acting Director
Assessment Division, OTE/OTS (TS-792)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTE/OTS (TS-792)

Submission Description

Acute inhalation toxicity study of CN-010-073 [2,2-bis(bromomethyl)-3-hydroxy-1-propyl phosphoric acid] in rats.

Submission Evaluation

The report fails to indicate whether the "gold liquid" tested in this experiment was the pure compound, a mixture, or a solution of the material in an organic solvent.

A number of unanswered questions remain with respect to this submission. What criteria were used for determining the ratio of vapor to aerosol in the test atmosphere? To what extent did the aerosol droplets condense on the fur of the rats? Were the chambers appropriate for exposing animals to aerosols? Were the nasal discharge and salivation observed in the test animals due to irritation or to cholinergic stimulation? Did the eyes have a bloodlike discharge? Did prior administration of atropine affect the response?

As far as the experiment itself goes, the duration of exposure was likely too short. In the future, the observed gross pathologic changes should be described as such rather than attempting to relate them to the action of the compound.

Current Production and Use

No information on the production and use of this material was located, nor was there an entry in the TSCA Candidate List.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

Comments/Recommendations

CN-110-523 will be evaluated in the ongoing Assessment Division study of flame retardant technology.

(a) The submitter should be asked to provide complete analytical data as well as the answers to the questions posed in the evaluation section.

(b) Section 8(b) data should be checked to determine commercial significance.

(c) The submitter should be asked to support his contention that the information presented in this submission reasonably supports a conclusion of substantial risk.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: June 21, 1978 (Revised May 10, 1979) Approved ______________

SUBJECT: Status Report 8EHQ-0678-0175

Revision Needed ______________

FROM: Joseph J. Merenda, Acting Director
Assessment Division, OTE/OTS (TS-792)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTE/OTS (TS-792)

Submission Description

Acute oral toxicity study of CN-110-335 [O-methyl-O-trans-(2-methoxycarbonyl-1-methylvinyl)-thiophosphoryl-N',N'-dimethylformamidine]. This compound is the trans form of VEL 4441, which is the subject chemical in submission 8EHQ-0678-0172.

Submission Evaluation

The structural formula for this compound suggests that it is an insecticide related to parathion. The high toxicity suggests that the material is a very potent inhibitor of acetylcholinesterase.

This degree of toxicity should probably require more elaborate LD_{50} determinations in a variety of species. It would be useful to have information on the anticholinesterase activity and a description of the effects of atropine on the manifestations of toxicity produced by this chemical.

Current Production and Use

No information on the production and use of this material was located in the secondary literature, nor was there an entry in the TSCA Candidate List.

Comments/Recommendations

(a) The submitter should be asked to provide analytical data on the test material and the results of any gross or histopathology performed on the test animals. The submitter should also be queried as to plans for additional future testing as well as a description of the contemplated uses of this material.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

(b) Section 8(b) data should be checked for evidence of commercial significance.

(c) This submission should be transmitted to OSHA, NIOSH, and OPP.

(d) The submitter should be asked to support his contention that the information presented in this submission reasonably supports a conclusion of substantial risk.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: June 21, 1978 (Revised May 10, 1979)

Approved ____________

SUBJECT: Status Report 8EHQ-0678-0176

Revision Needed ____________

FROM: Joseph J. Merenda, Acting Director
Assessment Division, OTE/OTS (TS-792)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTE/OTS (TS-792)

Submission Description

Acute toxicity studies of VEL 4083 (O,S-dimethyl-N-tetrahydropyran-2-yl thiophosphoramidate) in rabbits and rats.

Submission Evaluation

VEL 4083 appears to be as toxic as aspirin by oral administration; therefore, a more detailed investigation of the compound's LD_{50} is indicated. VEL 4083 is a thiophosphate and an amide and therefore is potentially a neurotoxin as well as an anticholinesterase. It would be useful to have additional information on these points.

This submission, like others, fails to provide an adequate analytical description of the test compound. In addition, no discussion of gross or histopathology is provided.

Current Production and Use

No information is available on the current production and use of this material, nor is there an entry in the TSCA Candidate List.

Comments/Recommendations

(a) Section 8(b) data should be checked to determine the commercial significance of this compound.

(b) The submitter should be asked to provide the information requested in the evaluation section above. Use information should, also be solicited.

(c) The submitter should be asked to support his contention for the information presented in this submission reasonably supports a conclusion of substantial risk.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: June 21, 1978 (Revised April 9, 1979)

SUBJECT: Status Report 8EHQ-0678-0177

Approved ____________

Revision Needed ____________

JJM 6/27/78

FROM: Joseph J. Merenda, Acting Director
Assessment Division, OTE/OTS (TS-792)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTE/OTS (TS-792)

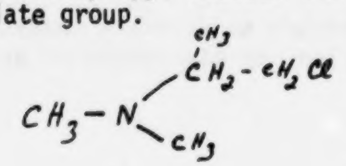
Submission Description

Results of an acute inhalation toxicity study of DMIC (2-chloro-N,N-1-trimethylethylamine, hydrochloride) in rats.

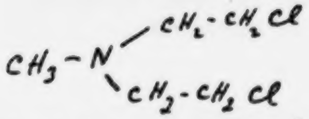
Submission Evaluation

No quantitative determination of the purity of the test compound was provided.

DMIC is a semi-nitrogen mustard (see below) and is therefore a potential alkylating agent which could ultimately be either mutagenic or carcinogenic. Compounds of this type are used in synthetic chemistry to add the dimethylamino isopropyl radical via replacement of the chlorine with the appropriate group.



DMIC



nitrogen mustard

It is not clear whether the molten DMIC remains stable or if it is decomposed to hydrochloric acid, chloroethane, or dimethylamine. The description on page 2 of the report suggests that DMIC is hygroscopic (absorbs moisture from the air). The description of the exposure chambers suggests that they were inappropriate for studies in which compounds capable of condensing on skin surfaces were administered. Due to the investigator's failure to determine analytically the actual concentration of material in the chambers, the amount inhaled by the rats can only be guessed. The duration of exposure and perhaps the intensity were also inadequate.

The immediate response of the rats indicates exposure to a mild irritant. Were the lungs entirely free of edema and hemorrhage?

***NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.**

Current Production and Use

No production figures are available for DMIC; however, the Directory of Chemical Producers lists one manufacturer which implies an annual production in excess of 1,000 lbs. The chemical is apparently used in organic synthesis for the introduction of the dimethylaminoisopropyl radical.

Comments/Recommendations

One other submission has been received on this chemical (8EHQ-0278-0073).

a) Production estimate should be confirmed with a check of the 8(b) data.

b) The submitter should be asked to provide analytical data as well as an answer to the question posed in the evaluation section.

c) This information should be transmitted to NIOSH and OSHA for their information.

d) The submitter should be asked to support his contention that the information presented in this submission reasonably supports a conclusion of substantial risk.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: June 21, 1978 (Revised May 10, 1979) Approved____________

SUBJECT: Status Report 8EHQ-0678-0178 Revision Needed ____________

FROM: Joseph J. Merenda, Acting Director
Assessment Division, OTE/OTS (TS-792)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTE/OTS (TS-792)

Submission Description

Preliminary results of acute and subacute studies with phenyl isocyanate in rats.

Submission Evaluation

Aromatic isocyanates have been reported to be exceedingly toxic. They can be easily converted chemically into aromatic urethanes and aromatic ureas. Such compounds have the potential for affecting nerve tissue.

Diluting phenyl urethane with petroleum ether as part of the experimental protocol was not a satisfactory solution to the problem of atmospheric concentration. Although the petroleum ether apparently did not affect the control animals, it may have contributed to the intoxication of group IV by virtue of its n-hexane content. n-Hexane is a known peripheral neurotoxin. The rats killed after several days of exposure appeared to be in shock, which could be related to one of several potential effects of phenyl isocyanate. It would be useful to have the clinical chemistry and hematological data as well as a description of the microscopic organ changes observed in the liver, kidneys, and lungs.

The submitter concludes from the acute toxicity testing that phenyl isocyanate "must be classed as a very toxic compound, providing an extreme toxic hazard because of its high volatility compared with its LC_{50}."

Current Production and Use

No annual production figures were available on phenyl isocyanate; however, the Directory of Chemical Producers lists three manufacturers, implying an annual production in excess of 1,000 pounds. Phenyl isocyanate is used as a reagent for identifying alcohols and amines and as a chemical intermediate.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

Comments/Recommendations

The March 16, 1978 Policy Statement requires that all submissions include the telephone number and signature of the person reporting the information. Despite the fact that this submission was telecopied, the notifier failed to provide the required signature and telephone number.

(a) Section 8(b) data should be checked to determine the annual production volume of this chemical.

(b) Complete copies of all reports cited in this submission should be requested. The notifier notes that the information presented in this submission represents preliminary data; inquiry should be made to determine if additional testing is contemplated.

(c) This information and any subsequently developed should be transmitted to NIOSH and OSHA.

(d) Phenyl isocyanate should be given CHIP consideration.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: June 26, 1978

Approved ____________

SUBJECT: Status Report 8EHQ-0678-0179

Revision
Needed ____________

FROM: Joseph J. Merenda, Acting Director
Assessment Division, OTE/OTS (TS-792)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTE/OTS (TS-792)

Submission Description

The submission summarizes ambient and stack sampling results during the manufacture of 2-bromo-1,1-dimethoxyethane (BADMA).

Submission Evaluation

This notice appears to be inconsistent with the minimum requirements for submission of information indicating a substantial risk to health or the environment as outlined in the March 16, 1978 Policy Statement. In order to qualify for submission, a monitoring study should indicate "widespread and previously unsuspected distribution in environmental media"; this notice, however, merely reports ambient and stack emission values for BADMA and DBEA (dibromoethylacetate?).

Comments/Recommendations

This submission should be noted as an example of the type of information not required for submission under Section 8(e).

The submitter should be asked to support his contention that the information contained in this submission reasonably supports a conclusion of substantial risk to health or the environment.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: June 28, 1978 Approved ____________

SUBJECT: Status Report 8EHQ-0678-0180P

Revision Needed ____________

FROM: Joseph J. Merenda, Acting Director
Assessment Division, OTE/OTS (TS-792)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTE/OTS (TS-792)

Submission Description

Report of an employee experiencing eye irritation while working at her desk; implicated chemicals include dicyclopentadiene and benzoyl chloride. No other employees reported any difficulty.

Submission Evaluation

The incident reported does not appear to warrant reporting as a substantial risk. As outlined in the March 16, 1978 Policy Statement, reports of human health effects resulting from uncontrolled exposure are to be reported if they refer to "serious or prolonged incapacitation, including the loss of or inability to use a normal bodily function with a consequent relatively serious impairment of normal activities" or to less serious effects that "may be preliminary manifestations of the more serious effects" and are accompanied by other triggering information. There is no indication in the present submission that any effect more serious than mere eye irritation was observed or anticipated in the affected employee.

Comments/Recommendations

The submission should be noted as an example of the type of information not required for submission under Section 8(e).

The notifier should be asked to support his contention that the information presented in this submission reasonably supports a conclusion of substantial risk to health or the environment.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: June 26, 1978

Approved ______________

SUBJECT: Status Report 8EHQ-0678-0181

Revision Needed ______________

FROM: Joseph J. Merenda, Acting Director
Assessment Division, OTE/OTS (TS-792)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTE/OTS (TS-792)

Submission Description

Report that benzoflex 9-88 (dipropylene glycol dibenzoate) causes skin sensitivity in women who have used feminine pads made with this plasticizer.

Submission Evaluation

Comment 13 of the March 16, 1978 Policy Statement specifically states that reports of dermal ailments need not be reported under Section 8(e) unless the symptoms are precursors of more serious problems. There is no information to demonstrate that the problems experienced by these women are of a sufficiently serious nature to warrant reporting.

Comments/Recommendations

This submission should be noted as an example of the type of information not required for notification under Section 8(e).

The submitter should be asked to support his contention that the information presented in this submission reasonably supports a conclusion of substantial risk to health or the environment.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: June 26, 1978

Approved____________

SUBJECT: Status Report 8EHQ-0678-0182PS

Revision
Needed ____________

FROM: Joseph J. Merenda, Acting Director
Assessment Division, OTE/OTS (TS-792)

TO: Warren R. Muir, Deputy Assistant Administrator
for Testing and Evaluation, OTE/OTS (TS-792)

Submission Description

Report of an employee who developed dermatitis following exposure to unspecified chemicals in a laboratory situation.

Submission Evaluation

Comment 13 of the March 16, 1978 Policy Statement specifically states that reports of dermal ailments need not be submitted under Section 8(e) unless the symptoms are precursors of more serious problems. There is no information presented which demonstrates that the problems experienced by this employee are of a sufficiently serious nature to warrant reporting. In addition, the submission fails to implicate one or a few chemicals as specified in the Policy Statement.

Comments/Recommendations

This submission should be noted as an example of the type of information not required for notification under Section 8(e).

The submitter should be asked to support his contention that the information presented in this submission reasonably supports a conclusion of substantial risk to health or the environment.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF TOXIC SUBSTANCES

DATE: APR 0 9 1979

SUBJECT: Status Report* 8EHQ-0678-0183

FROM: Walter W. Kovalick, Jr., Director
Program Integration Division (TS-793)

TO: Joseph J. Merenda, Director
Assessment Division (TS-792)

Submission Description

Naugatuck, Connecticut, release of chlorine gas.

On May 30, 1978, 20 to 25 pounds of chlorine gas were vented to the atmosphere as a result of a mechanical failure. The immediate area surrounding the release was evacuated. The Connecticut State Department of Environmental Protection was notified on May 30, and the EPA Regional office was notified on May 31.

Submission Evaluation

Chlorine is a greenish yellow gas with a pungent, suffocating odor. It is toxic by inhalation and reacts explosively or forms explosive compounds. It is an irritant and can cause fetal pulmonary edema. Chlorine combines readily with all elements except the rare gases and nitrogen.

Use

Chlorine is used largely for the manufacture of chlorinated lime, which is used in bleaching all kinds of fabrics; for purifying water; disinfecting, detinning, and dezincing iron; manufacture of synthetic rubber and plastics, chlorinated hydrocarbons, and a large number of other chemicals.

Comments/Recommendations

Due to the fact that a small quantity of materials was released which was immediately dissipated into the atmosphere, no further action is indicated either by the state or by EPA.

*NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: 23 JAN 1979

SUBJECT: Status Report* 8EHQ-0678-0184

Approved ____________

Revision Needed ____________

FROM: Frank D. Kover
Assessment Division, OTE/OTS

TO: Joseph J. Merenda, Director
Assessment Division, OTE/OTS

Submission Description

The submission consists of 28 separate pieces of information on FM 680 (1,2-bis(2,4,6-tribromophenoxy) ethane).

Submission Evaluation

The following summary evaluations are coded to the letters entered to the left of each entry in the cover letter accompanying this submission. In general, the submitted data do not appear sufficient to offer reasonable support for a conclusion of substantial risk. The notifier will, therefore, be asked to support its contention of substantial risk; if the notifier can offer additional support for a conclusion of substantial risk, the submission will accordingly be evaluated further.

A) Interim results of a rat teratology study. What is meant by the phrase "slight increase in the number of post-implantation losses"?

B) Report of occupational problems following exposure. The submitter should supply a copy of the "written report" referred to in this item. The information needed to evaluate the instances of occupational respiratory problems reported include conditions and duration of exposure, air levels, and complete physicians' reports.

C) Acute inhalation toxicity study in rats. The study uses only nominal atmospheric concentrations of the FM 680; actual concentrations are not reported, therefore, there is no indication that the material remained as a uniform mist and did not settle out on the walls of the chamber or on the rats' fur. The analytical purity of the material is not addressed. Microscopic examination of the rats' lungs should have been conducted.

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*NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

D) 28-day rat feeding study. FM 680 displayed some toxicity in this study and the material appears to accumulate in the fat and remain there for some time. The analytical purity of the test material was not recorded. Diet concentrations of 1,000 ppm appear to interfere with organ growth, 100 ppm interferes with the growth of the liver and spleen. Was any effect evident on the reticuloendothelial system? The "results and discussion" section of this report is characterized by attempts to explain away observed toxic effects as not being treatment related.

E) A Japanese testing company determined the 98-hour TL50 for orange-red killifish to be 230 mg/l. This is significantly lower than the TL50's reported for bluegills and rainbow trout, although the test compound is still only moderately toxic. Higher susceptibility of this test species and different dissolving method (dimethyl sulfoxide and castor oil carriers, plus sonification) may account for the differing TL50. In a natural situation, pelagic fish would probably not be exposed to such an insoluble chemical. Benthic organisms would be in greater danger. As with all static acute tests, these results do not test the chemical's true environmental hazard potential.

The same Japanese testing company also measured the bioconcentration of Firemaster 680 in carp exposed for 8 weeks. The bioconcentration factors were very low (F56) indicating a low tendency to bioconcentrate.

F) Acute toxicity studies in rabbits and rats. The absence of primary skin irritation does not indicate the potential for sensitization or haloacne. The dermal toxicity study in the rabbits has little significance. From the data presented in other studies in this submission, the probability is that the observed deaths during the first three days of the rat assay were due to substances other than FM 680. However, once again no analytical results were presented.

G) Acute dermal LD_{50}. This would appear to represent file emptying.

H) Acute oral toxicity study in rats. In the absence of microscopic pathology data and evidence of absorption, FM 680 cannot be considered to be nontoxic as proposed on page 1 of this report. The 21-day inhalation study (entry "0" in this series) established that absorbed FM 680 does not produce immediate effects but is stored in the body like DDT or PBB.

I) Acute oral toxicity study in beagle dogs. No information of value presented; this also likely represents file emptying.

J) Acute inhalation toxicity in the rat. Problems with this report include: no controls; inadequate necropsy; lack of any analytical information. This study indicates only that no immediate dramatic effects such as convulsions, odd behavior, or death will follow exposure to FM 680 dust.

K) See (L).

L) The 96-hour TL50's of Firemaster 680 reported for both species are quite high (1531 mg/l for bluegill and 1410 mg/l for rainbow trout) and suggest a low degree of acute toxicity to fish.

Several things need to be remembered when evaluating these data.

1. The biological loading (mass of fish per volume of water) is higher than recommended by an EPA-Industry committee which recommended standards for aquatic testing (EPA 660/3-75-009). The recommended loading is not more than 0.8 g/l, while the loading in these tests was 1 g/l in the blue-gill test and 1.19 g/l in the trout test. The excess loading would probably suggest the chemical to be more toxic than it really is.

2. No replicate tests were conducted.

3. The test material was suspended in water by sonification, meaning that the fish were exposed to particles of the test material, instead of a true solution. Because of this, it is impossible to say how much of the test material the fish were actually exposed to. It is likely that the fish absorbed less of the test compound because of the larger size of the particles, meaning that the acute toxicity may be much higher than suggested by these results.

M) No information of value to be found here.

N) 28-day dermal toxicity study in rabbits. This study appears to represent file emptying. FM 680 is a lipid soluble halogenated compound that stores in the fat. It is unfortunate that the proposed analyses for fat storage were never carried out.

O) 21-day inhalation study in rats. No immediate and dramatic signs, however, the compound is absorbed from the lungs (which act as a depot). FM 680 is stored in the liver and fat. The kidney and blood content cannot be evaluated in the absence of urinary levels. The high bromine content of the kidneys and the blood may be related to an active excretion process (only summary data were submitted on this point). The use of terms such as "few," "slight," or "several" in lieu of actual numbers is very disconcerting. Qualitative descriptions are not acceptable.

P) Acute inhalation toxicity in rat after pyrolysis. This study does not appear to even involve FM 680. It is not clear what was tested or at what concentration. The test material appears to be an irritant of ocular and upper respiratory mucosa. It may be a pulmonary irritant also. This is a highly inadequate study.

Q) Acute inhalation toxicity in the rat after pyrolysis. The test compound is inadequately characterized; no analytical data provided. The use of calculated concentrations in lieu of actual measurements is not acceptable. How much of the substance condensed in the chamber and on the animal's fur is not clear. The test material appears to be an irritant of the upper respiratory tract mucosa and of the eye. Ocular porphyrin discharge (chromodaccorrhea) and diarrhea suggests vagus nerve stimulation.

R) 14-day range finding study in rats. This is a pilot study and not 8(e)-submittable material.

S) 28-day toxicity study in rats. This study shows that FM 680 is absorbed and stored in fat tissue. This complements study (O) in this series insofar as fat storage is concerned.

T) Biodegradation study with ^{14}C-tagged FM 680. The test compound was found to degrade slowly under the conditions of this assay.

U) FM 680 was negative in both the Ames Test and in a yeast mutagenicity assay.

V) Acute oral and dermal LD_{50} studies. The identity and purity of the experimental flame retardant are not contained in the submission. The material is apparently non-irritating to the eye and skin. The acute dermal toxicity study is inadequate.

W) Biodegradation study with ^{14}C-tagged FM 680. The test compound was found to degrade slowly over the 30 weeks of this assay. These results, plus those presented in (T), indicate that FM 680 is relatively nonbiodegradable in the presence of sewage and garden soil microorganisms.

X) Primary skin irritation test. The identity of the material tested is not revealed in the submission. The material was found to be mildly irritating for rabbit skin. This does not indicate the compound's potential for sensitization or pseudo-sensitization due to chronic, mild irritation.

Y) Acute vapor inhalation toxicity. The composition of granulated FM 680 is not revealed in this submission. The heating of the test material in the vapor study suggests that the substance released upon heating may have possibly been tribromophenol. The data are inadequate for an 8(e) submission.

Z) Skin sensitization in guinea pigs. The test material was not identified chemically. This substance is a primary skin irritant. It was not sensitizing in guinea pigs. However, there is no guarantee that the material will not produce chronic irritation of the skin following persistent exposure.

Aa) 90-day subacute oral toxicity study in rats. The chemical identity of the FM 680 lot is not revealed in the submission. This subacute feeding study suggests that the material may be less toxic than PBB. However, the animals receiving the highest dose showed liver changes histologically which were reflected by increased alkaline phosphatase in the blood. The kidney weights of the females on the 10% diet were significantly larger than in the control group. The ratio of kidney weight to body weight was significantly greater in male rats on the 1% diet. No data are presented to show the extent of bromine retention in tissues.

Bb) 90-day subacute toxicity study in rats. Merely supplements study (Aa).

Current Production and Use

Please refer to one of the below referenced submissions for this information.

Comments/Recommendations

Several other submissions have concerned FM 680 (8EHQ-0378-0086; 8EHQ-0478-0115).

a) The submitter should be asked to support his contention that the submitted information offers reasonable support for the conclusion that FM 680 presents a substantial risk of injury to human health or the environment.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: JAN 25 1979

SUBJECT: Status Report* 8EHQ-0678-0185

Approved JM 2/4/79

Revision Needed ________

FROM: Frank D. Kover
Assessment Division, OTE/OTS

TO: Joseph J. Merenda, Director
Assessment Division, OTE/OTS

Submission Description

This submission consists of 19 documents relating to several different chemicals. The subject chemicals, study types, and reported summary findings are summarized in the enclosed table. The implication in the submitter's transmittal letter that all of the submitted information concerns FM PHT4 (tetrabromo bisphenol A) is incorrect.

Submission Evaluation

Preliminary review of the submitted documents indicates that none of them provides information of the type identified in EPA's Statement of Interpretation and Enforcement Policy on section 8(e) notifications (43 FR 11110, March 16, 1978).

Comments/Recommendations

a) The submitter should be asked to review the documents submitted by this notice and provide his rationale for their submission as information offering reasonable support for a conclusion of substantial risk of injury to health or the environment.

b) The submitter should be requested to clearly identify the chemical substance or mixture which is the subject of each submitted document.

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*NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

SUMMARY OF STUDIES SUBMITTED TO EPA
SUBMISSION No.: 8EHQ-0678-0185

Item	Test Material	Study Type	Reported Results
A	FM PHT-4	Mutagenicity Evaluation Final Report	Not mutagenic
B	Tetrabromophthalic anhydride #4	Acute Toxicity/Rat	No deaths
C	Tetrabromophthalic anhydride #4	Acute Toxicity/Rabbit	Negative
D	Tetrabromophthalic anhydride	Acute Oral Toxicity/rat Acute Dermal Toxicity/Rabbit	$LD_{50} >$ 10.0 gm/kg $LD_{50} >$ 10.0 gm/kg
E	FM PHT4 (micronized)	Primary Skin Irritation/Rabbit	Not a primary skin irritant
F	FM PHT4 (micronized)	Eye Irritation/Rabbit	Positive for eye irritant
G	FM PHT4 (micronized)	Acute Inhalation Toxicity	Acute inhalation toxicity $>$ 10.92 mg/L
H	FM PHT4	Dermal Sensitization/guinea pig	Probable sensitizing agent
I	HIPS Resin/ Sb_2O_3	Acute Inhalation Toxicity/Rat (after pyrolysis)	No deaths; exposure not quantitated
J	HIPS Resin/ PHT 4/Sb_2O_3	Acute Inhalation Toxicity/Rat (after pyrolysis)	No deaths; exposure not quantitated
K	HIPS Resin/ PHT4/Sb_2O_3	Acute Inhalation Toxicity/Rat (after pyrolysis)	No deaths; exposure not quantitated
L	FM PHT4 (micronized)	28-Day Dermal Toxicity/Rabbit	Deaths occurred in 5000 mg/kg/day group, some toxic effects at lower application levels

SUMMARY OF STUDIES SUBMITTED TO EPA
SUBMISSION No.: 8EHQ-0678-0185
(continued)

Item	Test Material	Study Type	Reported Results
M	FM PHT4 (micronized)	21-day Inhalation Toxicity/Rat	No deaths; some toxic effects were observed
N	FM PHT4(?)	Mutagenicity Evaluation Final Report	Not mutagenic
O	FM PHT4	Repeated insult patch test/human	No irritation reactions or skin sensitization
P	FM PHT4	Pilot Teratology/Rat	No compound-induced effects at dose $\leq$ 300 mg/kg/day. For 10,000 mg/kg/day dose, death occurred in all but one animal.
Q	FM PHT4	Acute Toxicity/Bluegill Sunfish	96 hour $LC_{50} >$ 10.0 mg/l
R	FM PHT4	Acute Toxicity/Rainbow Trout	96 hour $LC_{50} >$ 10.0 mg/l
S	FM PHT4	Acute Toxicity/Water Flea	48 hour $LC_{50} >$ 5.6 mg/l

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: July 10, 1978

SUBJECT: Status Report 8EHQ-0678-0187

Approved ____________

Revision Needed ____________

FROM: Frank D. Kover
Assessment Division, OTE/OTS

TO: Joseph J. Merenda, Acting Director
Assessment Division, OTE/OTS

Submission Description

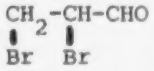
Results of a mutagenicity evaluation of a mixture of 2-hydroxypropyl-2(2-hydroxyethyl)ethylene glycol and either 2,3-dibromopropanol or 2,3-dibromoprophenol (?) (see evaluation section below).

Submission Evaluation

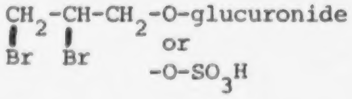
There appears to be some confusion in naming the basic compound. The letter of June 2 to the performing laboratory states that the compound is 2,3-dibromoprophenol. The submission cover letter dated June 9 states that the active compound is 2,3-dibromopropanol. In any event, the compound is directly mutagenic and does not require activation by liver enzymes.

If the material is actually 2,3-dibromopropanol, the submitter should be asked to provide information on the metabolic fate of the material. Is it converted to one of the compounds shown below or something else? It should be noted that 2,3-dibromopropanol is closely related to 1,2-dibromo-3-chloropropane (DBCP).

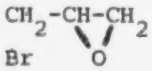
Possible Metabolites

(1)


$\underset{Br}{CH_2}-\underset{Br}{CH}-CHO$

(2)


$\underset{Br}{CH_2}-\underset{Br}{CH}-CH_2\text{-O-glucuronide or -O-}SO_3H$

(3)


Current Production and Use

This mixture is apparently used as a flame retardant; however, the actual application of the material is not known. No production information is available.

***NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.**

Comments/Recommendations

(a) The question concerning chemical nomenclature should be cleared up through a follow-up to the submitter. Analytical data should also be requested.

(b) The submitter should be asked to support his contention that the information presented in this notice reasonably supports a conclusion of substantial risk.

(c) This mixture should be examined in the ongoing Assessment Division evaluation of flame retardant technology.

(d) Section 8(b) data on this chemical should be included in this report when the inventory is completed.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: December 4, 1978

SUBJECT: Status Report 8EHQ-0678-0188

Approved_______________

Revision
Needed _______________

FROM: Frank D. Kover
Assessment Division, OTE/OTS

TO: Joseph J. Merenda, Director
Assessment Division, OTE/OTS

Submission Description

Trip report cryptically describing the results of a delayed neurotoxicity study of MC 948 [bis(tribromoneopentyl)pentaerythritol cyclic diphosphate] in hens. This particular trip report was submitted separately as an individual submission for each of the tested compounds.

Submission Evaluation

The information presented in this submission is not sufficient to permit an adequate evaluation.

Current Production and Use

No information was located in the secondary sources consulted.

Comments/Recommendations

The submitter should be asked to provide his rationale for the submission of this information as offering reasonable support for the conclusion that MC 948 presents a substantial risk of injury to health or the environment.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: JUL 5 1979

SUBJECT: Status Report* 8EHQ-0678-0189P

Approved JM 7/6/79

Revision Needed ______

FROM: Frank D. Kover, Acting Chief
Chemical Hazard Identification Branch

TO: Joseph Merenda, Director
Assessment Division

Submission Description

Report of possible well water contamination at a farm in Hardeman County, Tennessee. This report is apparently related to an incident that was reported in the May 24, 1978 edition of Chemical Week (122 (21), p. 16); this report has been attached.

Submission Evaluation

The submission does not offer much information except to note that Velsicol received a request from the Tennessee Water Quality Control Division requesting reference samples of four chemicals that, ostensibly, were present in the well water samples. The Chemical Week story notes that the state identified 12 chemicals in the water and that the presence of 11 was confirmed by EPA. Velsicol reportedly buried more than 200,000 55-gallon drums of chemical waste at a depth of about 15 feet in the general area of the present contamination.

Comments/Recommendations

The information contained in this submission is not sufficient to allow a full evaluation regarding the substantial risk of this incident. This status report should be transmitted to OWWM, PID, Region IV, and the Tennessee Public Health Department.

***NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.**

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: July 10, 1978

Approved ______________

SUBJECT: Status Report 8EHQ-0678-0190

Revision
Needed ______________

FROM: Frank D. Kover
Assessment Division, OTE/OTS

TO: Joseph J. Merenda, Acting Director
Assessment Division, OTE/OTS

Submission Description

The submission reports the preliminary results of a 90-day oral toxicity study of MC 984 [bis(1,3-dichloro-2-propyl)-3-chloro-2,2-dibromomethyl-1-propyl phosphate; VC 984] in rats. The other chemicals discussed in the submission are handled in other notices received at the same time (see 8EHQ-0678-0188; 8EHQ-0678-0194; 8EHQ-0678-0208; 8EHQ-0678-0206).

Submission Evaluation

MC 984 appears to adversely affect both growth and food consumption in white rats. The kidneys and liver and possibly also the nervous system appear to be affected. It will be necessary to have quantitative data to evaluate the significance of these pathological changes.

Current Production and Use

No information is available in secondary sources on the production and use of MC 984, nor is it entered in the TSCA Candidate List.

Comments/Recommendations

Several other submissions have been received on MC 984 (8EHQ-1277-0022; 8EHQ-0178-0033; 8EHQ-0278-0048; 8EHQ-0278-0049; 8EHQ-0278-0053; 8EHQ-0378-0100; 8EHQ-0378-0107; 8EHQ-0478-0136; 8EHQ-0678-0173).

(a) In the event that the completed study reasonably supports a conclusion of substantial risk, it should be submitted pursuant to Section 8(e). With respect to the possible future submission, the submitter should be asked to remedy the problems observed in many of his earlier submissions (lack of any analytical data, poor description of pathology, etc.) prior to actual submission.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

(b) The submitter should be asked to support his contention that the information presented on MC 984 reasonably supports a conclusion of substantial risk.

(c) Section 8(b) production data on this chemical should be checked for possible inclusion in this status report.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: October 26, 1978

Approved ____________

SUBJECT: Status Report 8EHQ-0678-0191

Revision Needed ____________

FROM: Frank D. Kover
Assessment Division, OTE/OTS

TO: Joseph J. Merenda, Director
Assessment Division, OTE/OTS

Submission Description

Results of a mutagenicity evaluation of VC-935 A [poly(dibromo-phenylene oxide)] in the unscheduled DNA synthesis assay in human cells.

Submission Evaluation

The test material, identified as only a "beige powder," was positive in this assay, indicating some potential for mutagenic hazard. The chemical name indicates that the compound is the polymer; therefore, it is questionable that the polymeric material is responsible for the positive results. The possibility exists that there is some other component in the polymer, such as an unreacted monomer or a plasticizer, which is causing the mutagenic activity. More extensive evaluation will be required to answer this question.

Current Production and Use

No production and use information was located in the secondary sources consulted. In addition, there is no entry in the TSCA Candidate List.

Comments/Recommendations

Several other submissions have dealt with this chemical (8EHQ-0278-0066; 8EHQ-0378-0090; 8EHQ-0378-0103; 8EHQ-0478-0132; 8EHQ-0578-0141).

(a) The submitter should be asked to provide a description of the analytical purity of the test material.

(b) Information requested as part of the follow-up to earlier submissions on this chemical should be checked for inclusion in this file.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: July 10, 1978

SUBJECT: Status Report 8EHQ-0678-0192S

FROM: Frank D. Kover
Assessment Division, OTE/OTS

TO: Joseph J. Merenda, Acting Director
Assessment Division, OTE/OTS

Approved ______________

Revision
Needed ______________

Submission Description

The submission consists of a letter describing the results of sterility retesting of employees who were occupationally exposed to DBCP (2,3-dibromo-3-chloropropane) and/or tris [tris(2,3-dibromopropyl) phosphate]. Three previously received submissions (8EHQ-0278-0056; 8EHQ-0478-0123; 8EHQ-0478-0128) reported the results of earlier fertility studies conducted on these individuals.

Submission Evaluation

This submission indicates a continuing lack of fertility in workers who were occupationally exposed to DBCP.

It would be desirable to have a more accurate accounting of the workers exposed to tris and those exposed to DBCP. Even without such an accounting, it appears that workers exposed to DBCP between January-March of 1975 and April-June of 1976 are still sterile as judged by sperm counts. It also appears that workers exposed to tris show recovery but to what extent is not clear from the submitted data.

What has the submitter told these workers to this point? Has this information been transmitted to OPP and OSHA by the submitter? It is not likely that workers who have had continuing failure of spermatogenesis from the time of exposure in early 1975 and early 1976 will recover reproductive capability.

Current Production and Use

Unconfirmed reports indicate that tris is no longer being produced domestically; however, reference in this submission to an occupational group having as their current assignment operator or warehouseman for tris raises the question of whether the submitter is currently engaged in manufacturing or processing tris. 1975 U.S. production of tris is estimated to have been 7-12 million pounds. Tris was previously used as a flame retardant for textiles; however, CPSC

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has moved to control this use. The only current use is as a flame retardant for plastics. OPP has conditionally suspended DBCP for some uses and completely suspended it for all other uses. Conditional suspension means that only certified pesticide applicators can use DBCP.

Comments/Recommendations

In light of the evidence that the DBCP-exposed workers may never recover reproductive capability, the time has come for OTS to fully pursue this problem with other Federal authorities and determine what actions are necessary.

(a) OTS should determine what additional information, if any, OPP has received on DBCP under Section 6(A)2 of FIFRA.

(b) OTS should determine what information has been made available to NIOSH and OSHA on DBCP fertility effects.

(c) OTS should convene a meeting of all involved government agencies to facilitate and coordinate exchange of information on this situation and also to determine the need for possible action.

(d) OTS should request a complete work history of the DBCP and tris-exposed cohorts. In addition, OTS should determine the amount of information that the submitter has provided to these workers. Finally, the recommendations contained in the earlier status reports in this series should be put into action.

(e) OTS should request that the submitter clarify its reference to current assignments of workers as operators or warehousemen for tris by notifying EPA whether and in what volume manufacture or processing of tris are carried out by the submitter's firm.

(f) This information should be transmitted to NIOSH, OSHA, CPSC, TS/OE, OGC, and OPP.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: July 10, 1978

SUBJECT: Status Report 8EHQ-0678-0193

FROM: Frank D. Kover
Assessment Division, OTE/OTS

TO: Joseph J. Merenda, Acting Director
Assessment Division, OTE/OTS

Approved ______

Revision Needed ______

Submission Description

Acute toxicity studies of VEL 3838 [1-(5-t-butyl-1,3,4-thiadiazol-2-yl)-3-methyl-5-acetoxy-2-imidazolidinone] in rats and rabbits.

Submission Evaluation

The LD_{50} of VEL 3838 suggests that this compound has low acute toxicity. However, this substance contains ring structures that are associated with long-term toxicity following administration over time of much lower doses than those used in the LD_{50} test. The imidazolidinone ring sugggests that the compound will have an effect on histamine release, most likely to be manifested in the skin. However, the ring structure may also block H_2 receptors. The consequences of such blockade on immune reactions, carcinogenicity, cardiovascular, and gastrointestinal systems are the subject of current intense investigation. Histamine is an imidazole derivative. All current H_2 blocking agents contain the imidazole ring.

VEL 3838 also contains a cyclic ureide ring, specifically a hydantoin structure. Compounds containing this ring are used to treat epilepsy. Such substances have been shown to produce central nervous system toxicity (e.g., dilantin, nirvanol), to produce teratogenesis in both animals and humans (dilantin cleft palate), and perhaps also to affect red blood cell maturation as well as lymphoid tumorigenesis.

Current Production and Use

No information is available in the secondary literature.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

Comments/Recommendations

(a) This submission appears to concern a chemical which is in some stage of research and development. The submitter should be asked to provide some use information on this material.

(b) According to the responses offered to comments 14 and 31 (q.v.) of the March 16, 1978 Policy Statement, submission of the information contained in this notice does not appear to be required under Section 8(e) of TSCA. The submitter should be asked to support his contention that, despite the guidance offered by the Policy Statement, the information contained in this notice is in fact required for reporting and that it reasonably supports a conclusion of substantial risk.

(c) Section 8(b) production data on this chemical should be included in this report when the inventory becomes available.

(d) Analytical data should also be requested from the submitter.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: July 10, 1978

Approved_______________

SUBJECT: Status Report 8EHQ-0678-0194

Revision
Needed _______________

FROM: Frank D. Kover
Assessment Division, OTE/OTS

TO: Joseph J. Merenda, Acting Director
Assessment Division, OTE/OTS

Submission Description

Acute toxicity studies of VEL 4038 [1-(5-t-butyl-1,3,4-thiadiazol-2-yl)-3-methyl-5-octanoylimidazolidin-2-one] in rabbits and rats.

Submission Evaluation

VEL 4038 has a structure similar to VEL 3838 (see submission 8EHQ-0678-0193). It differs by having a longer fatty acid chain in the number 5 position of the hydantoin (cyclic urea) ring. This may slow the rate of hydrolysis by esterases in the tissue, increase lipid solubility, and thereby create problems of storage in the liver and fat tissues. Acute toxicity data on such compounds have little relevance for assessing chronic toxicity potential.

Current Production and Use

No information is available in the secondary literature.

Comments/Recommendations

(a) This submission appears to concern a chemical which is in some stage of research and development. The submitter should be asked to provide some use information on this material.

(b) According to the responses offered to comments 14 and 31 (q.v.) of the March 16, 1978 Policy Statement, submission of the information contained in this notice does not appear to be required under Section 8(e) of TSCA. The submitter should be asked to support his contention that, despite the guidance offered by the Policy Statement, the information contained in this notice is in fact required for reporting and that it reasonably supports a conclusion of substantial risk.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

(c) Section 8(b) production data on this chemical should be checked for inclusion in this report when the inventory is completed.

(d) Analytical data should also be requested from the submitter.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: July 10, 1978

Approved ____________

SUBJECT: Status Report 8EHQ-0678-0195

Revision
Needed ____________

FROM: Frank D. Kover
Assessment Division, OTE/OTS

TO: Joseph J. Merenda, Acting Director
Assessment Division, OTE/OTS

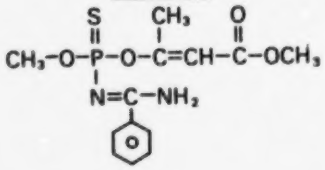
Submission Description

Acute oral toxicity study of VEL 4609 [N-(2-methoxycarbonyl-1-methylvinyl-methoxy-thiophosphoryl) benzamidine] in rats.

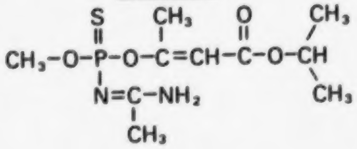
Submission Evaluation

The structural formula of VEL 4609 closely resembles that of VEL 4578 (see submission 8EHQ-0678-0196). Both are parathion analogs, but VEL 4609 has much greater acutely lethal toxicity for rats than does VEL 4578, probably because the former is a more effective anticholinesterase. Nonetheless, the exact purity of each compound tested is not specified. In addition, no information is provided on the rate of biotransformation of either compound or the effects of the metabolites on cholinesterase activity.

VEL 4609



VEL 4578



Current Production and Use

No information was located in the secondary sources consulted.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

Comments/Recommendations

(a) This submission appears to concern a chemical which is in some stage of research and development. The submitter should be asked to provide some use information on this material.

(b) According to the responses offered to comments 14 and 31 (q.v.) of the March 16, 1978 Policy Statement, submission of the information contained in this notice does not appear to be required under Section 8(e) of TSCA. The submitter should be asked to support his contention that, despite the guidance offered by the Policy Statement, the information contained in this notice is in fact required for reporting and that it reasonably supports a conclusion of substantial risk.

(c) Section 8(b) production data on this chemical should be checked for inclusion in this report when the inventory becomes available.

(d) Analytical data should also be requested from the submitter. Following receipt of the use description, additional supplemental information may be desired.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: July 10, 1978

SUBJECT: Status Report 8EHQ-0678-0196

FROM: Frank D. Kover
Assessment Division, OTE/OTS

TO: Joseph J. Merenda, Acting Director
Assessment Division, OTE/OTS

Approved ____________

Revision
Needed ____________

Submission Description

Results of acute toxicity studies of VEL 4578 [N'-(2-isopropoxycarbonyl-1-methylvinyl-methoxy-thiophosphoramido) acetamidine] in rabbits and rats.

Submission Evaluation

VEL 4578 is acutely lethal to rats receiving it by oral administration. The structural formula suggests that the material has some of the properties of malathion. A more satisfactory assessment can be made if anticholinesterase data and a description of the symptoms evoked following administration are provided. It would also be useful to have a description of the signs of toxicity exhibited by the animals immediately preceding death.

Current Production and Use

No information was located in the secondary sources consulted.

Comments/Recommendations

(a) This submission appears to concern a chemical which is in some stage of research and development. The submitter should be asked to provide some use information on this material.

(b) According to the responses offered to comments 14 and 13 (q.v.) of the March 16, 1978 Policy Statement, submission of the information contained in this notice does not appear to be required under Section 8(e) of TSCA. The submitter should be asked to support his contention that, despite the guidance offered by the Policy Statement, the information contained in this notice is in fact required for reporting and that it reasonably supports a conclusion of substantial risk.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

(c) Section 8(b) production data on this chemical should be checked for inclusion in this report when the inventory becomes available.

(d) Analytical data should also be requested from the submitter. Following receipt of the use description, additional supplemental information may be desired.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: July 10, 1978

Approved ___________

SUBJECT: Status Report 8EHQ-0678-0197

Revision
Needed ___________

FROM: Frank D. Kover
Assessment Division, OTE/OTS

TO: Joseph J. Merenda, Acting Director
Assessment Division, OTE/OTS

Submission Description

Acute toxicity study of VEL 3510 [1-beta,beta-dimethoxyethyl-1-methyl-3-(5-t-butyl-1,3,4-thiadiazol-2-yl) urea] in rabbits and rats.

Submission Evaluation

VEL 3510 is a noncyclic urea which resembles VEL 3838 (see 8EHQ-0678-0193) and VEL 4038 (see 8EHQ-0678-0194) in chemical structure. The thiadiazol ring will still be capable of exerting its effects on histamine as described in the status reports prepared for the two previously noted submissions. The substituted urea moiety, although open chained rather than cyclic, would probably have chronic toxicological effects similar to those described for the cyclic urea compounds in the two other submissions.

Current Production and Use

No information is available in the secondary literature.

Comments/Recommendations

(a) This submission appears to concern a chemical which is in some stage of research and development. The submitter should be asked to provide some use information on this material.

(b) According to the responses offered to comments 14 and 31 (q.v.) of the March 16, 1978 Policy Statement, submission of the information contained in this notice does not appear to be required under Section 8(e) of TSCA. The submitter should be asked to support his contention that, despite the guidance offered by the Policy Statement, the information

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NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

contained in this notice is in fact required for reporting and that it reasonably supports a conclusion of substantial risk.

(c) Section 8(b) production data on this chemical should be checked for inclusion in this status report when the inventory becomes available.

(d) Analytical data should also be requested from the submitter.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: 10 JUL 1978

SUBJECT: Status Report* 8EHQ-0678-0198

Approved ______

Revision Needed ______

FROM: Frank D. Kover
Assessment Division, OTE/OTS

TO: Joseph J. Merenda, Director
Assessment Division, OTE/OTS

Submission Description

Acute oral toxicity of 2,4,6-tribromophenol in rats.

Submission Evaluation

This submission really adds nothing to what is known about the acute toxicity of 2,4,6-tribromophenol. Compounds of this type are of concern mainly with respect to long-term exposure.

Current Production and Use

This information may be found in one of the earlier submissions referenced below.

Comments/Recommendations

Several other submissions have concerned this chemical (8EHQ-1277-0024; 8EHQ-0178-0032; 8EHQ-0278-0069; 8EHQ-0378-0095).

a) Comment 14 of the March 16, 1978 Policy Statement discusses the reporting of data developed in routine tests including LD$_{50}$'s. The response to this comment indicates that "unknown effects occurring during such a range test may have to be reported if they are those of concern to the Agency and if the information meets the criteria set forth in parts V and VI." In light of this, the submitter should be asked to demonstrate that the information supplied fulfills the criteria specified in Comment 14. In addition, the submitter should be asked to support his contention that the information contained in this notice reasonably supports a conclusion of substantial risk and that the information is in fact required for reporting in light of the guidance contained in Comment 14.

b) Analytical data should be requested from the submitter.

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*NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: August 16, 1978

Approved______________

SUBJECT: Status Report 8EHQ-0678-0199

Revision
Needed ______________

FROM: Frank D. Kover
Assessment Division, OTE/OTS

TO: Joseph J. Merenda, Director
Assessment Division, OTE/OTS

Submission Description

Results of acute toxicity studies of VEL 3947 [1-(5-t-butyl-1,3,4-thiadiazol-2-yl)-3-methyl-5-(m-chlorobenzoyloxy) imidazolidin-2-one] in rabbits and rats.

Submission Evaluation

The mortality data on VEL 3947 are of limited value as they only indicate that the application of large amounts of the material to the skin or by mouth would not have immediate dramatic consequences. The data have no value for estimating whether exposure to these large amounts results in pathologic changes in internal organs or if enzyme induction occurs. In addition, there is no indication to what extent absorption occurred from either site of application. The data have no value for estimating the effects of chronic exposure to small amounts of VEL 3947.

Current Production and Use

No information was located in the secondary sources consulted.

Comments/Recommendations

(a) The submitter should be asked to provide a description of the uses of VEL 3947.

(b) Comment 14 of the March 16, 1978 Policy Statement discusses the reporting of data developed in routine tests including LD_{50}'s. The response to this comment indicates that "unknown effects occurring during such a range test may have to be reported if they are those of concern to the Agency and if the information meets the criteria set forth in parts V and VI." In light of this, the submitter should be asked to demonstrate that the information supplied in this submission fulfills the criteria specified in comment 14.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: December 4, 1978

SUBJECT: Status Report 8EHQ-0678-0200

Approved ______________

Revision Needed ______________

FROM: Frank D. Kover
Assessment Division, OTE/OTS

TO: Joseph J. Merenda, Director
Assessment Division, OTE/OTS

Submission Description

Acute inhalation toxicity study of a mixture of halobenzenes in rats. The tested material is actually a sample collected from reactor stillbottoms composed of 1,4-dibromo-2,5-dichlorobenzene (76%), dibromodichlorobenzene (unspecified isomer) (7%), 1-bromo-2,5-dichlorobenzene (16%), and 1% unknown.

Submission Evaluation

Despite the compositional data offered by the submitter, it is essential that EPA have good quantitative data on the composition of the test mixture in the inhalation chamber.

The use of calculated concentrations in lieu of actual measurements inside the test chamber is not a satisfactory procedure. It is not known how much of the material crystallized when the vapors encountered the temperature of the test chamber or how much settled on the surface of the chamber or on the fur of the animals.

The study was inadequate and probably not properly interpreted. There were no untreated controls. Although weight gain was resumed after the third day, the gain was far less for female rats than for males. In the absence of microscopic examination of the organs, the statement that "no compound related pathologic changes were observed" has little meaning. A better experimental design is required for such a study to have significance.

Current Production and Use

This is apparently a sludge bottom resulting from an unknown production process.

***NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.**

Comments/Recommendations

(a) The submitter should be asked to identify the "DBDCB isomer" found on the GC trace.

(b) The submitter should be asked to justify their submission of this information as offering reasonable support for the conclusion that this material presents a substantial risk of injury to health or the environment.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: July 10, 1978

Approved ____________

SUBJECT: Status Report 8EHQ-0678-0201

Revision
Needed ____________

FROM: Frank D. Kover
Assessment Division, OTE/OTS

TO: Joseph J. Merenda, Acting Director
Assessment Division, OTE/OTS

Submission Description

Results of acute toxicity testing of methyl-m-chlorobenzoate in bluegill sunfish and rainbow trout.

Submission Evaluation

The static 96-hour LC_{50} for bluegill sunfish and rainbow trout was 3.0 mg/l and 7.6 mg/l, respectively. The test was poorly conducted and prompted the following questions:

(1) Why was dissolved oxygen decreased to such low levels (2.1-2.0 mg/l) after 96 hours in the bluegill test tanks, but not in the rainbow trout tanks of comparable concentration and biological loading? Was the instrumentation adequately calibrated?

(2) What is the weight range of the test organisms used? The submission only provides mean values.

(3) What is the purity of the compound being tested? Any contaminants? What are its physical-chemical properties? How water soluble is the material? How volatile?

(4) What was the *actual* concentration of the test substance present in the tanks initially and after 96 hours? The submission provides only nominal concentrations.

Based on the information contained in this report, it is impossible to assess the hazard of this compound. The reported 96-hour LC_{50} values indicate a moderate degree of toxicity. The low dissolved-oxygen level in the bluegill test may have stressed the organisms such that they were more susceptible to the effects of the material. The actual concentrations of the material in the tanks may have been much lower than the nominal concentrations reported (i.e., it is more toxic). Volatility and solubility data on the compound are

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needed to determine this. In addition, no replicate test chambers were run to see how reproducible the results are. Behavioral abnormalities were noticed at concentrations greater than or equal to 3.2 mg/l. In general, static acute bioassays reveal limited information.

Current Production and Use

No information is available on the production and uses of this material; it is contained in the TSCA Candidate List.

Comments/Recommendations

(a) The submitter should be asked to provide use information on this material.

(b) The submitter should be asked to support his contention that the information contained in this notice reasonably supports a conclusion of substantial risk.

(c) The submitter should be asked to respond to the questions posed in the evaluation section.

(d) Section 8(b) production data on this chemical should be checked for inclusion in this status report when the inventory becomes available.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: August 16, 1978

SUBJECT: Status Report 8EHQ-0678-0202

FROM: Frank D. Kover
Assessment Division, OTE/OTS

TO: Joseph J. Merenda, Director
Assessment Division, OTE/OTS

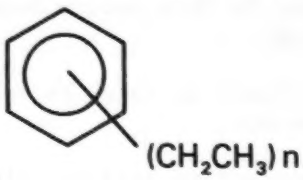
Approved ______________

Revision Needed ______________

Submission Description

Summary results of mouse skin-painting studies in which a residue product known as polyethylbenzene tails (a by-product of the production of ethylbenzene by reaction of ethylene and benzene over a catalyst) was found to induce skin carcinomas in over 90% of the painted mice.

Polyethylbenzene



Submission Evaluation

Polyethylated benzene appears to be unequivocally highly carcinogenic in mice. The submission states that "no specific chemical analysis of this residue product has been made." The composition of the material, including a determination of the amount of polycyclic aromatic hydrocarbons which it may contain, should be established. No controlled studies in humans previously exposed to polyethylbenzene tails appear to have been made, and therefore the evidence for no harmful effects in humans is anecdotal. For the time being, the tested compound should be considered a potent carcinogen.

Current Production and Use

The annual U.S. capacity for ethylbenzene is 11.2×10^9 pounds; at this time, some 96% (by pounds of capacity) involves an ethylene and benzene reaction where polyethylbenzene by-product is produced. Approximately 7.2×10^9 pounds of ethylbenzene were produced in 1976; 97-99% of the material was used in the manufacture of styrene. During the production of styrene, it is imperative that the ethylbenzene be free of polyethylbenzenes; the polyethylbenzenes may comprise 10% of the reaction product and are separated from

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ethylbenzene by distillation. The polyethylbenzenes are further separated into "light" polyethylbenzene (mostly diethylbenzene), which are returned to the reactor since they can react with benzene to produce ethylbenzene, and "heavy" polyethylbenzenes, which are components of the tails referred to in this submission. These tails (polyethylbenzenes and tars) are typically burned as fuels.

The submitter claims to have produced approximately 4 million pounds of polyethylbenzene tails in 1977. The submitter's annual ethylbenzene capacity is reported at 340 x 10^6 pounds. Therefore, if the submitter's ratio of tails to capacity holds true industrywide, approximately 130 x 10^6 pounds of tails would be produced annually. There are, however, some differences in the processes employed by different companies, and this may influence the ratio. Also, this estimate is based on capacity and not actual production, and so the value may be somewhat skewed.

Related Past and Present Activities

A hazard assessment on styrene and ethylbenzene is available from the Assessment Division.

Comments/Recommendations

(a) A full copy of the study should be requested from the submitter. This should include any available analytical data, a description of the pathology, statistical analyses, etc.

(b) It should be recommended to the submitter that an analytical effort be initiated to better define the composition of "polyethylbenzene tails."

(c) This information should be transmitted to OSW, OAQPS, NIOSH, and OSHA.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: August 16, 1978

Approved ____________

SUBJECT: Status Report 8EHQ-0678-0203

Revision Needed ____________

FROM: Frank D. Kover
Assessment Division, OTE/OTS

TO: Joseph J. Merenda, Director
Assessment Division, OTE/OTS

Submission Description

Results of acute toxicity studies of VEL 4411 [2-methyl-4-(3,4-dichlorophenyl) triazolidin-3-one] in rabbits.

Submission Evaluation

This report merely states that VEL 4411 is an eye irritant but is not a primary skin irritant. In the absence of information on blood levels, one cannot say if the material penetrates the skin. LD_{50} data by other routes would be of value.

The molecular configuration of VEL 4411 raises the question of carcinogenicity.

Current Production and Use

No information was located in the secondary sources consulted.

Comments/Recommendations

(a) The submitter should be asked to provide a description of the uses of VEL 4411.

(b) Comment 14 of the March 16, 1978 Policy Statement discusses the reporting of data developed during the course of routine testing. The response to this comment indicates that "unknown effects occurring during such a range test may have to be reported if they are those of concern to the Agency and if the information meets the criteria set forth in parts V and VI." In light of this, the submitter should be asked to demonstrate that the information supplied fulfills the criteria specified in Comment 14. In addition, the submitter should be asked to

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

support his contention that the information contained in this notice reasonably supports a conclusion of substantial risk.

(c) The composition of the test material was not adequately characterized; complete analytical data should be supplied by the submitter.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: August 28, 1978

SUBJECT: Status Report 8EHQ-0678-0204

Approved ______________

Revision Needed ______________

FROM: Frank D. Kover
Assessment Division, OTE/OTS

TO: Joseph J. Merenda, Director
Assessment Division, OTE/OTS

Submission Description

Acute toxicity studies of PCS 1375 in rabbits. The chemical identity of PCS 1375 is in question as the molecular structure and formula supplied by the submitter as an attachment do not agree with the name given in their cover letter. This discrepancy must be rectified. The chemical formula for PCS 1375 is 1-(3,4-dichlorophenyl)-1-carbamyl methoxy-3-methylurea.

Submission Evaluation

The report on PCS 1375 establishes that the compound is a primary eye irritant. It does not appear to be a primary skin irritant. There were no studies on the material's possible skin sensitization properties. The results of skin application to rabbits are only suggestive of the fact that PCS 1375 is not readily absorbed through the skin. A description of the blood levels observed following skin exposure would be most useful.

Current Production and Use

No information was located in the secondary sources consulted.

Comments/Recommendations

(a) The identity of the test material must be provided by the submitter.

(b) A description of the uses of PCS 1375 should be supplied by the submitter.

(c) Chemical analysis of the compound as well as the results of any blood level determinations should be provided by the submitter. The submitter should be asked to support his contention that the information in this submission reasonably supports a conclusion of substantial risk.

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*NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

EPA FORM 1320-6 (REV. 3-76)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: August 21, 1978

SUBJECT: Status Report 8EHQ-0678-0205

Approved ______________

Revision Needed ______________

FROM: Frank D. Kover
Assessment Division, OTE/OTS

TO: Joseph J. Merenda, Director
Assessment Division, OTE/OTS

Submission Description

Acute toxicity studies of polyvel G 100 (trade name for a "low to medium molecular weight petroleum hydrocarbon resin from mixtures of steam cracked distillate with light steam cracked naphtha") in rabbits and rats.

Submission Evaluation

The composition of polyvel G 100 is not given. The number of rats used to determine the LD_{50} is inadequate. However, this acute value may not be very significant for the substance; the long-term toxicity would be of more concern. The weight gain, particularly for the females, appears to be on the low side, especially from days 7 to 14. In some instances, there was actually a loss in the female weights. This suggests that a chronic intoxication is progressing and that the internal organs should be examined histologically. The observed hypoactivity could be due to CNS, cardiovascular, or kidney toxicity.

Depending on the composition of polyvel G 100, the material may, upon long-term testing, be found to be a carcinogen.

Current Production and Use

No information was located in the secondary literature consulted.

Comments/Recommendations

(a) Analytical data on this material should be provided by the submitter.

(b) The submitter should be asked to provide their rationale for the submission of this information as offering reasonable support for the

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***NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.**

conclusion that polyvel G 100 presents a substantial risk of injury to health or the environment.

(c) The submitter should be asked about their plans for further testing of this material, especially with respect to carcinogenicity.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: December 4, 1978

Approved __________

SUBJECT: Status Report 8EHQ-0678-0206

Revision
Needed __________

FROM: Frank D. Kover
Assessment Division, OTE/OTS

TO: Joseph J. Merenda, Director
Assessment Division, OTE/OTS

Submission Description

This submission presents the results of several studies on chlorendic anhydride (CA).

Submission Evaluation

One of the studies involved a mutagenicity evaluation of CA in the unscheduled DNA synthesis assay. This experiment found that CA is active both with and without activation. Because the genetic end point of this particular test is unknown, it is difficult to make any assessment of the risks involved. A battery of gene mutation and chromosome aberration tests would give a more meaningful indication of the mutagenic and, possibly, carcinogenic risk. However, since this compound has been shown capable of damaging DNA in the unscheduled DNA synthesis tests, exposure to CA should be kept at a minimum.

The number of rats of each sex used to determine the acute toxicity of CA is too small to draw any meaningful conclusions. Untreated controls were not used. The inadequacies in this study are still illustrated in the results obtained. Under usual laboratory conditions, female rats gained weight at approximately the same rate as males. This apparently occurred at the highest dose level of 500 mg/kg. However, at 1/10 and 1/50 of this dose, females gained far less than the males and one female actually lost considerable weight. From the size of the groups tested, this can be a random chance occurrence. On the other hand, it may reflect inadequate recordkeeping.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

A somewhat similar phenomenon, probably a chance occurrence due to inadequate group size, is seen in the rabbit dermal toxicity study. The one fatality occurred in the low-dose group. This dose is 1/10 of the largest dose. How then can the conducting laboratory conclude that the minimal lethal dose by the dermal route of administration is greater than the largest dose used? In addition, the weight gains and losses were more erratic at the larger dose. This suggests the possible appearance of toxicity. These comments assume that the recordkeeping was precise.

The conclusion of the skin sensitization study in guinea pigs suggest that CA is probably a skin sensitization agent in humans.

Current Production and Use

Refer to one of the below-named submissions for this information.

Comments/Recommendations

Chlorendic anhydride has been the subject of several other submissions (8EHQ-0278-0050; 8EHQ-0278-0059; 8EHQ-0378-0094; 8EHQ-0378-0101; 8EHQ-0478-0127; 8EHQ-0478-0134; 8EHQ-0878-0231).

(a) The submitter should be asked to provide its rationale for the submission of this information as offering reasonable support for the conclusion that chlorendic anhydride presents a substantial risk of injury to health or the environment.

(b) The submitter should be asked to submit a more complete description of the analytical purity of the test compound.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: August 21, 1978

SUBJECT: Status Report 8EHQ-0678-0207

Approved ______________

Revision Needed ______________

FROM: Frank D. Kover
Assessment Division, OTE/OTS

TO: Joseph J. Merenda, Director
Assessment Division, OTE/OTS

Submission Description

Acute toxicity studies of dicyclopentadiene acrylate (DCPD acrylate) in rabbits and rats.

Submission Evaluation

The test for primary eye irritation was equivocal by the scoring system, and therefore the test will be rerun. The skin test shows the substance to be mildly irritating.

Dermal application of 20 g/kg to rabbits did not result in a dramatic response. The weight gain was poor for two of the four male rabbits and for two and possibly three of the four female rabbits. Two of the females actually sustained body weight losses over 14 days. The same effect on weight gain was observed in all female rats and one male rat. Three male rats showed excessive weight gain from the 7th to the 14th day. This may have been the result of temporary liver enlargement due to enzyme induction or to fat accumulation. This study has little significance for chronic effects.

Current Production and Use

No information was located in the secondary sources consulted.

Comments/Recommendations

One other submission has been received on DCPD acrylate (8EHQ-1177-0017P).

The submitter should be asked to provide their rationale for the submission of this information as offering reasonable support for the conclusion that DCPD acrylate presents a substantial risk of injury to health or the environment.

***NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.**

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: December 4, 1978

SUBJECT: Status Report 8EHQ-0678-0208

Approved ______________

Revision Needed ______________

FROM: Frank D. Kover
Assessment Division, OTE/OTS

TO: Joseph J. Merenda, Director
Assessment Division, OTE/OTS

Submission Description

The submission consists of four pieces of information reporting health or environmental information on hexachlorocyclopentadiene and, in one instance, related compounds.

Submission Evaluation

The teratology studies included in this submission do not contain sufficient information to permit an adequate evaluation.

The summary sheet from the report on the mouse dominant lethal assay of hexachlorocyclopentadiene states that there was no evidence that the chemical caused significant dominant lethal activity. Therefore, this information should not have been submitted under Section 8(e).

The final document, entitled "Chlorinates in Mississippi River Catfish and Carp," reports on the levels of a number of chlorinated hydrocarbons found in fish and water samples taken from the Mississippi near a creek (Wolf Creek) carrying the outfall from the submitter's plant. Of particular concern are the high levels of several chlorinated organics identified in catfish flesh. Fish collected above and below the creek were contaminated, although fish from immediately below the confluence showed the highest degree of contamination, less than 1 ppm in the flesh. Carp taken 5 miles upstream showed no contamination. Water contamination was generally quite low; however, one would expect relatively low levels of these chemicals in the water because of their low water solubility; the sediments would be expected to show more contamination.

Because of the mobility of the fish sampled, one cannot prove that the submitter is the source of the contamination. However, it is clear that fish contamination is widespread in this area of the Mississippi River and may represent a significant threat to the environment and humans who consume these fish. The chemicals of concern include chlordene and several hexachlorocyclopentadiene wastes, specifically hex vinyl chloride and hex BCH (exact chemical structure is not known). This particular report was well written and came to generally sound scientific conclusions. The major omission was the failure to note the upstream distance from the confluence of Wolf Creek with the Mississippi to the point of the submitter's waste outfall on Wolf Creek. If the outfall is located several miles upstream of the confluence point, monitoring closer to the outfall may be more indicative of the nature and extent of the problem. If the outfall does contain the chlorinated hydrocarbons monitored in this report, it is expected that more contamination would be seen closer to the outfall. If so, chlordene, hex BCH, hex vinyl chloride, and possibly other contamination could be quite significant. The introduction to the report states that this monitoring effort was needed "to permit assessment whether Wolf Creek contained effluents from (the submitter's) hex manufacturing plant...." Monitoring in the Mississippi River will not address this question.

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*NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

Current Production and Use

Refer to one of the below-named reports for this information.

Comments/Recommendations

Several other submissions have been received on hexachlorocyclopentadiene (8EHQ-0977-0004; 8EHQ-1177-0013; 8EHQ-0178-0038; 8EHQ-0278-0054; 8EHQ-0278-0061; 8EHQ-0278-0064; 8EHQ-0378-0099; 8EHQ-0378-0102; 8EHQ-0378-0109; 8EHQ-0378-0110; 8EHQ-0678-0189P).

This submission and status report should be transmitted to OWWM (OWPS, ODW, and OSW), OPP, OE, ORD, Monitoring Division (OPII), and EPA Regions IV and VI.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: 08 AUG 1978

SUBJECT: Status Report* 8EHQ-0778-0209

FROM: Frank D. Kover
Assessment Division, OTE/OTS

TO: Joseph J. Merenda, Director
Assessment Division, OTE/OTS

Approved ____________

Revision Needed ____________

Submission Description

Results of environmental monitoring studies conducted for TCDD (2,3,7,8-tetrachlorodibenzo-p-dioxin), other polychlorinated dioxins (hexachlorodibenzo-p-dioxin (HxCDD) and octachlorodibenzo-p-dioxin (OCDD)), chlorinated phenols, PBBs (polybrominated biphenyls), and PCBs (polychlorinated biphenyls) in river water, sediments, and fish generally collected from the lower Tittabawassee River in Michigan. Please note that the submitter's Risk Evaluation Group has "concluded that the data on TCDD do not appear to indicate a substantial risk of injury to human health or the environment." The submission consists of two letters plus an attachment.

Submission Evaluation

Dioxins (The following subheadings refer to the June 28 letter addressed to the Document Control Officer.)

B. Plant Discharge Stream

An April, 1977 grab sample of effluent from Dow's tertiary treatment effluent was found to contain 0.008 ppb of TCDD. Twelve other tertiary discharge samples (composite or grab) taken from September, 1976 through April, 1978 showed no detectable levels of TCDD although the limit of detection was generally 0.005 ppb; the single secondary effluent sample had no detectable TCDD. Dow suggests sample contamination as a possible explanation of the one positive finding. Nevertheless, as described in part D below, five of six caged trout placed in the tertiary effluent stream were found to contain detectable quantities of TCDD.

C. Native Fish

The information presented in this section is difficult to interpret for a number of reasons: it is not clear if the levels reported indicate whole fish or fish flesh values; the number of specimens collected (and sampled) at each station is not specified; and it is not clear which species were sampled in each case.

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1. The submitter reports that analyses (apparently performed in 1977) found from 0.07 to 0.23 ppb of TCDD in four of nine catfish samples retained from a 1976 study; no TCDD was detected in the other five. What the cover letter fails to note is that these catfish samples were actually collected from nine different sites, therefore, a more accurate description of this information would indicate that four of nine sites where catfish were sampled had evidence of TCDD contamination. Also note that three or four of the sites where TCDD contamination was not found are actually upstream from the Dow Chemical outfall.

2. OCDD was found in six of eight catfish samples analyzed for that substance at concentrations ranging from 0.04 to 0.15 ppb. As noted in number (1) above, each catfish sample had been collected from a different location, indicating widespread OCDD environmental contamination. At least one of the OCDD-contaminated catfish was collected upstream from the Dow plant in the Pine River. HxCDD was also identified in one of these eight catfish samples.

3. Analysis (whole fish or flesh?) of a variety of fish native to the Tittabawassee River (caught downstream of the Dow chemical plant in May, 1977) indicated the presence of from 0.020 to 0.24 ppb of TCDD in nine of fourteen fish samples tested (see Table IV of submission). The fish species showing evidence of TCDD contamination included rock bass (1/1), catfish (2/2), bullheads (3/3), and crappie (3/3). Perch and carp samples did not show TCDD contamination. It is not clear in the table how many carp and perch were analyzed. Dow's letter to the EPA Document Control Officer indicates that five were analyzed; however, from the table it appears that only one fish of each species may have been caught.

Dow's letter to John Hesse (p.3) states that the fish represented in Table IV were collected from the Tittabawassee River at Smith's Crossing Road. It would appear, however, that the perch were (was) actually collected from the Saginaw Bay, unless "Saginaw Bay Perch" is a unique perch species.

In only three cases in Table IV were the low resolution GCMS findings confirmed with high resolution GCMS. In all cases, EPA wants confirmation of low resolution dioxin findings with high resolution GCMS. Dow should be asked if the high resolution findings are available or if the confirmatory work can still be conducted. Dow should also be advised of EPA's desire for high resolution GCMS confirmation of all future dioxin residue analyses. This comment applies to virtually all of the tables contained in this submission.

4. Perch collected from Saginaw Bay in June, 1978 showed no detectable TCDD, from 0.3 to 0.8 ppb of PBB, and 43-140 ppb of PCBs. Catfish from the bay, on the other hand, showed 0.024 ppb of TCDD, 21 ppb of PBBs, and 2100 ppb of PCBs. It is not clear if the catfish results represent analytical findings from a single specimen or if the results from several fish have been aggregated.

Although the results presented above are somewhat sketchy, several generalizations are possible. Firstly, TCDD appears to be a fairly widespread contaminant in catfish (and possibly other fish) collected from the Tittabawassee River below the Dow plant. Although no TCDD was identified in catfish sampled upstream from the plant, catfish collected from Saginaw Bay which appears to lie approximately 30 or more miles downstream from the Dow plant were contaminated with measurable levels of TCDD. Other fish in addition to catfish (i.e., bottom feeders) appear to be contaminated with TCDD although the significance of this, in terms of demonstrating that mid- or upper-level feeders may be at risk of TCDD exposure either through the presence of dissolved TCDD in the water column or the ingestion of TCDD-contaminated organisms, is difficult to interpret due to trivial identification of sampled fish species. The submitter should be asked to provide proper identification of the sampled fish as well as the location where each was collected.

D. Bioconcentration Study

Caged rainbow trout placed in flowing water at the Freeland Monitoring Station (approximately six miles downstream from the Dow effluent) showed no detectable TCDD (limit of detection was 0.01 to 0.03 ppb) following 7-, 14-, and 30-day exposure when only fish flesh (edible portion) was analyzed. However, when the 30-day trout were subjected to a more sensitive analysis of the whole fish, detectable quantities (0.01 and 0.02 ppb) of TCDD were found. It is not clear how many trout from the Freeland monitoring station were analyzed.

In another study, five of six caged rainbow trout placed in a mixture(?) of the plant's tertiary effluent under flowing conditions showed traces of TCDD (0.02-0.05 ppb) after 7 days. The sixth fish may have accumulated a comparable amount of TCDD, however, since the limit of detection for that measurement was 0.06 ppb. This bioconcentration test might have been more demonstrative if a longer exposure period had been employed. The whole series of bioconcentration studies would likely have profited from the use of native fish species, especially if bottom or mid-level feeders had been employed as placement of the cages indicated.

The fact that TCDD was found in caged trout held near the outfall and at some distance downstream seems to indicate that some of the material is held in suspension (adsorbed to particulate matter) or dissolved in the water column. (Another possibility is that the downstream trout consumed native food organisms that were contaminated with TCDD.) These findings indicate that downstream fish exposed to flowing water as well as those fish residing near the Dow outfall are at risk of TCDD exposure. Moreover, these findings appear to confirm (in a somewhat qualitative manner) the points raised in part C above, namely that (a) mid- and upper-level feeders as well as bottom feeders residing for some distance downstream from the Dow plant are at risk of TCDD contamination, and (b) TCDD contamination of the Tittabawassee River appears to be quite widespread.

Dow should provide full details on this section of their submission. In particular, the results of whole fish analysis are not reported for several of the caged trout studies and the experimental protocols (especially with regard to the number of fish tested at each site) are inadequately presented.

Dow also reports the results of a laboratory radiotracer bioconcentration study which showed that TCDD bioconcentrates on the order of 6,600 times in trout (this is corroborative of earlier findings).

Chlorophenols

High concentrations (70 ppb) of some chlorophenols (e.g., pentachlorophenol) were identified in Dow's effluent in samples taken during winter months, with substantially lower concentrations found in spring and summer samples. Some chlorophenols were found in the waters below the plant (up to 4 ppb), but much more (up to 90 ppb) was identified in sediments below the plant. Upstream contamination was not evident. Unidentified fish species were reported to have fairly high concentrations of some chlorophenols (levels up to 120 ppb); however, it is not clear if this represents flesh or whole fish analysis.

PBB

Widespread PBB contamination of fish (unidentified species) above and below the Dow plant was evident. Levels up to 2800 ppb were found although it is unclear whether this refers to whole fish or only flesh.

PCB

Levels up to 2 ppm of PCBs were found in catfish in Saginaw Bay. This approaches the FDA action level of 5 ppm which is currently under consideration for a lowering to 2 ppm.

Current Production and Use

Polychlorinated dioxins are impurities that may be formed as unwanted contaminants under certain conditions during the production of chlorophenols. TCDD is a highly toxic contaminant which may be produced during the manufacture of 2,4,5-trichlorophenol (2,4,5-TCP).

2,4,5-Trichlorophenoxy acetic acid (2,4,5-T) is a registered pesticide derived from 2,4,5-TCP and therefore is potentially contaminated with TCDD from the TCP intermediate. On April 21, 1978, the Office of Pesticide Programs issued a Rebuttable Presumption Against Registration (RPAR) of pesticide products containing 2,4,5-T. This notice represents the current Agency position on the potential risks of continued registration of 2,4,5-T and its TCDD contaminant.

Overall Evaluation

Dow's conclusion that the reported TCDD contamination presents no substantial risk to people who might eat fish containing trace quantities of TCDD has not been adequately evaluated by the Assessment Division to this point. Nevertheless, Dow's summary of lifetime cancer and reproductive studies in rats indicates that TCDD is a rat carcinogen and must therefore be viewed as a potential human carcinogen. Further discussion of the potential health risks posed by TCDD can be found in the Rebuttable Presumption Against Registration of pesticide products containing 2,4,5-T (43 FR 17116) and in a July 27, 1978 memo from FDA's Bureau of Foods which have been appended.

The March 16, 1978 EPA Policy Statement on Section 8(e) specifies that the Agency considers reportable substantial risk information to include "widespread and previously unsuspected distribution in environmental media, as indicated in studies." Dow does not appear to have adequately considered this point in their evaluation of the data provided in this notice. The information contained in this submission clearly offers reasonable support for the conclusion that TCDD is a widespread contaminant of the Tittabawassee River downstream from the Dow plant in Midland, Michigan. There is some evidence that the contamination problem extends to the Saginaw Bay, which is 30 or more miles downstream from the Dow plant. The evidence of TCDD contamination in widely dispersed native fish notwithstanding, perhaps the finding of most concern is that caged trout held six miles downstream from the Dow outfall were found to have detectable levels of TCDD (whole fish analysis) following a mere 30 days of exposure. This is most distressing for several reasons. Firstly, it demonstrates that TCDD is being transported downstream in flowing water. This point offers clear refutation of any argument that the instances of TCDD-contaminated fish resulted from movement of the fish downstream and not the movement of the TCDD itself. In addition, this raises concern of TCDD exposure for any persons taking their drinking water from the Tittabawassee or Saginaw Rivers or the Saginaw Bay. Secondly, this demonstrates that sufficient quantities of TCDD are being transported in river waters such that exposed pelagic fish are able to bioconcentrate detectable amounts of TCDD despite the presumed dilution effects associated with six miles of river transport. It is not clear if the TCDD identified in these caged fish results directly from exposure to dissolved TCDD, if the TCDD in the sediments is being stirred up and transported in conjunction with bottom particulate matter, or if TCDD is being transported through the food chain. Another possibility is that some of the observed TCDD is the result of historic contamination of this waterway. Dow should provide any information in its possession delineating the half life of TCDD in river sediments.

In response to the information reported by Dow in this submission, the State of Michigan issued an advisory to citizens that they should not consume any fish caught in the Tittabawassee River below Midland or in the Saginaw River. The Bureau of Foods of the FDA has informed EPA that they agree with this action taken by the State of Michigan.

Another aspect of Dow's submission that does not appear to have been given adequate consideration in Dow's conclusion that the TCDD data do not indicate a substantial risk is the possible impact of TCDD on organisms living in or near the impacted waters. A previously published study by Miller et al. (Env. Hlth. Perspectives, 2, 1973, 177-186) shows that immature fish appear to be quite sensitive to TCDD following a latency period of 10-60 days even at exposure levels of less than 1 part per trillion. Furthermore, the manner in which consumption of TCDD-contaminated fish might affect fish eating birds or mammals and the potential for such exposure to cause reproductive effects in these animals (including fish) is not known.

In light of: (a) no detectable TCDD in fish taken upstream from Dow; and (b) the results of the fish accumulation study conducted with caged trout exposed to Dow's tertiary effluent; it would appear rather conclusive that Dow's discharge represents the major source, if not the only source of the TCDD contamination found in the Tittabawassee and Saginaw Rivers and Saginaw Bay in Michigan.

The potential widespread contamination of the Tittabawassee and Saginaw Rivers with OCDD indicated by Dow's analyses of the catfish sampled in 1976 should also be further investigated. Dow should be asked to provide details or any follow-up investigations they have performed on OCDD contamination.

The data showing contamination of fish by chlorophenols, PBBs and PCBs should also be further evaluated.

Comments/Recommendations

Some of the information contained in this submission should undergo more in-depth evaluation by appropriate experts. Therefore, it is recommended that:

1) Lead responsibility for the detailed technical evaluation of the dioxin and chlorophenol portions of this submission should be transferred to the Office of Pesticide Programs.

2) Lead responsibility for the detailed technical evaluation of the PCB and PBB aspects of this submission should be transferred to the Office of Chemical Control's PBB Workgroup.

3) Dow must supply all analytical protocols including a description of the sampling methods employed. Dow should also provide additional information on the fish sampled (date and site of collection, number of fish, and species) as well as a complete description of the analytical results (especially with respect to flesh vs. whole fish analyses and precise identification of the dioxin isomer detected in each case). All other information needs noted in this status report should also be provided to EPA.

4) This status report and submission should be transmitted to OE/TS, OWHM, OGC, ODW, Region V, Michigan Dept. of Natural Resources, FDA, and U.S. Dept. of the Interior. OE should ask Region V to check Dow's effluent discharge permit and consider revision if indicated.

5) Any other substantial risk information in Dow's possession on TCDD, OCDD, HxCDD, other chlorodioxins, PBB, PCB, and chlorophenols should be forwarded to the Agency as a supplement to this initial submission. This should, if possible, include any information available in Dow files predating January 1, 1977.

6) Table X of the letter to Hesse is not complete as no TCDD values are reported. Dow must provide this information.

7) Dow does not provide an adequate basis for their statement that a heavy diet of contaminated (at the levels reported) Tittabawassee fish would have little significant impact on humans. In particular, few of Dow's assumptions are presented and no calculation is given for Dow's one-hundred fold safety factor for individuals relying on a fish diet taken from the Tittabawassee River. Dow should provide this information as well as any other factors considered by their TSCA 8(e) Risk Evaluation Group in concluding that "the data on TCDD do not appear to indicate s substantial risk of injury to human health or the environment."

8) Dow should describe the scope and timing of any additional work which is planned relative to this submission. Dow should explain in detail the program "mapped out" on page 3 of the Hesse letter. Although the testing and monitoring data presented are not statistically significant, the Agency (despite the preliminary nature of the present evaluation) feels that the TCDD data in the submission "reasonably support a conclusion of substantial risk" in and of themselves. However, Dow should consider initiation of additional testing and monitoring activities. The bioconcentration study which was run for periods of only 7 to 30 days on trout does not seem long enough to provide the shape of the bioconcentration curve to be expected in local native fish. In addition, native fish species (such as catfish, perch, etc.) would likely be more appropriate than the trout employed by Dow. The analytical data on TCDD and other chemical residues in native fish do not represent a statistically valid sampling of the fish around the Dow plant. Dow should consider additional monitoring to further define the

limits and extent of the contamination, including evidence of TCDD contamination in biota other than fish.

9) Region V should bring this submission to the attention of the chemical companies located upstream and downstream from Dow in an attempt to pinpoint other possible sources of the observed PBB, PCB, dioxin, and chlorophenol contamination. These companies should be asked to provide any information in their possession which may further define the extent or nature of this potentially hazardous situation. This request should be made with the understanding that these companies should consider submission of this information pursuant to section 8(e) of TSCA if applicable.

10) Dow claims in their cover letter that it "is not a producer or processor of PBB or PCB" and, therefore, by implication that the company has no responsibility to report substantial risk information concerning these chemicals. However, if PBBs or PCBs appear as an impurity in any product Dow manufactures, processes or distributes, Dow would be considered a manufacturer, processer or distributor of the PBBs or PCBs. The appropriate work groups should determine whether these chemicals appear as an impurity in any Dow product.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: 08 FEB 1979

SUBJECT: Status Report* 8EHQ-1173-0209
(Supplement)

FROM: Frank D. Kover
Assessment Division, OTE/OTS

TO: Joseph J. Merenda, Director
Assessment Division, OTE/OTS

Approved ____________

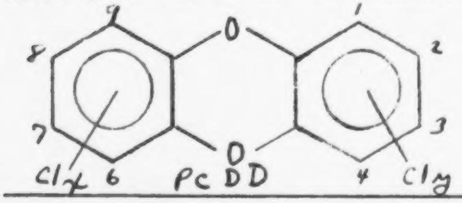
Revision Needed ____________

Submission Description

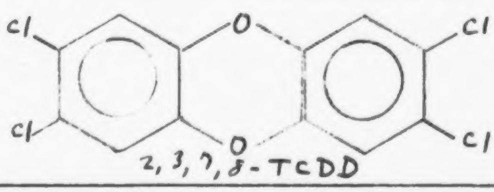
The submission was made as a followup to Dow Chemical Company's two earlier submissions on the detection of chlorinated dioxins and other chlorinated organics in various environmental samples. In a press release (attached), Dow concluded that "its research ... has verified the following sources for chlorinated dioxins: refuse incinerators, fossil-fueled powerhouses, gasoline and diesel powered automobiles and trucks, fireplaces, charcoal grills and cigarettes." On the basis of this work, Dow concluded that "dioxins occur everywhere as a result of normal combustion processes." The submission consists of the press release and related material, a report presenting Dow's data and conclusions, and several appendices describing sampling and analytical methodologies.

Background

The polychlorinated dibenzo-p-dioxins (PCDDs) are a series of tricyclic aromatic compounds which exhibit similar chemical and physical properties. The basic structure of PCDDs (as shown below) has eight possible points of chlorine substitution. From the monochloro to the octachloro derivatives, a total of 75 different positional isomers is possible.



PcDD



2,3,7,8-TCDD

*NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

The most extensively studied isomer of the PCDDs is 2,3,7,8-tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD), one of the most potent toxicants presently known. The toxic effects induced by other TCDD isomers are less well characterized; however, they appear to exhibit a lesser degree of toxicity (both quantitatively and qualitatively) than 2,3,7,8-TCDD. For these reasons, the PCDD isomer attracting the greatest amount of Agency interest and activity is the 2,3,7,8-TCDD.

Submission Evaluation (An overall evaluation of the submitted information will be presented in this section of the status report; a detailed technical evaluation of the submission can be found in the attached appendix.)

The information contained in the present submission was received as a followup to the Dow Chemical Company's earlier submissions of June 28, 1978 (8EHQ-0678-0209) and October 11, 1978 (8EHQ-1078-0209 [Followup]) which concerned the presence of chlorinated dioxins in Tittabawassee River fish collected near Dow's Midland, MI chemical plant. A detailed description and evaluation of the June, 1978 submission can be found in the status report prepared for that submission. The following listing summarizes the most important points from that initial Dow submission.

a) Tetrachloro dibenzo-p-dioxins (TCDDs, isomers not identified) appear to be widespread contaminants of the Tittabawassee and Saginaw Rivers (and possibly Saginaw Bay) downstream from Midland. Octachloro dibenzo-p-dioxin (OCDD) also appears to be widely distributed downstream of Dow. TCDD was not detected in 3 fish taken upstream of the Dow Midland facility, although OCDD was apparently detected in one of these fish.

b) Five of six caged rainbow trout held in a mixture of Dow's tertiary waste treatment effluent under flowing conditions for 7 days accumulated traces of TCDD (ppt).

c) Caged rainbow trout held in flowing waters approximately six miles downstream from Dow's plant accumulated detectable amounts (ppt) of TCDD (whole fish analysis) after 30 days of exposure. This indicates downstream movement of TCDD.

Based on the above, it appeared that Dow's discharge represented the major, if not the only, source of the chlorinated dioxin contamination found in the Tittabawassee and Saginaw Rivers and Saginaw Bay in Michigan.

The latest submission represents the output of a Task Force established by Dow's Michigan Division "to identify the potential sources of the chlorinated dioxins" found in the Tittabawassee River. This report advances as "strongly supported" a number of conclusions that, on careful evaluation, have no documented support in the information submitted by Dow. A detailed evaluation of Dow's report is provided in the attached appendix; the main points resulting from the Agency's evaluation have been condensed as follows:

a) No information, other than purely circumstantial evidence, has been submitted by Dow to support the premise that polychlorinated dibenzo-p-dioxins (PCDDs) and especially the TCDDs are typical by-products of combustion. Other investigators have demonstrated under laboratory conditions that PCDDs can be formed during the pyrolysis of polychlorophenates or polychlorophenoxy-containing materials. However, there is no experimental evidence (either submitted by Dow or present in the literature) indicating that combustion in the absence of PCDD precursors normally results in PCDD synthesis.

b) Much of the analytical work reported by Dow in this submission used methods that have "not always been validated and not yet corroborated by other scientists." Because of this, little or no analytical significance can be derived from the results reported by Dow. In order to derive significant and valid analytical meaning and/or conclusions from the results of part per billion (ppb) and part per trillion (ppt) analysis for PCDDs, the results must be accompanied by (1) appropriate quality control results and (2) a complete description of the criteria used to identify and confirm the presence of PCDD residues.

c) Many of the PCDD residue values relied on by Dow when formulating its conclusions as to the "ubiquity" of PCDDs were identical or approximately equal to the analytical method's level of detection. Such numbers have uncertain analytical significance especially in situations when non-validated analytical methods are employed.

d) Dow claims (p.21 of its report) that the results of its analysis of soil and dust samples "strongly support the conclusion that chlorinated dioxins are produced in incinerators and fossil fueled powerhouses as a consequence of combustion." In point of fact, the results presented by Dow offer no scientific documentation (other than weakly circumstantial evidence) relating its observations on PCDD contamination of soil and dust to the synthesis of PCDDs as a by-product of incineration or power generation. There is some circumstantial evidence that the hexachloro dibenzo-p-dioxins (HxCDDs), heptachloro dibenzo-p-dioxins (HpCDDs), and octachloro dibenzo-p-dioxins (OCDDs) identified in the soil samples from the urban and the metropolitan areas may be associated with the operation of a powerplant and an incinerator, respectively. This, however, does not demonstrate that the presence of these substances results from their synthesis as a normal combustion by-product. EPA's evaluation of these data indicates that the following conclusions, contrasting Dow's claims, can be supported:

(1) Midland, MI, and especially the area around the Dow plant, exhibits the greatest evidence for gross PCDD contamination among the various locations sampled. This is true both in terms of the proportion of samples in which PCDDs were detected and the degree of contamination evident in individual samples. In the latter case, the levels of PCDDs found in Midland are 2-4 orders of magnitude greater than those reported at other locations. The fact that much higher levels of PCDDs were found in soil and dust around the Dow chemical plant as compared to urban, metropolitan, and rural areas suggests that polychlorophenol production or some other activity at the Dow plant may be the source of the observed PCDD contamination.

(2) To the extent that TCDDs, especially 2,3,7,8-TCDD, are the PCDDs of greatest Agency concern, the levels of TCDDs identified in Midland soil and dust samples indicate that this area represents a definite TCDD "hot spot." In comparison, there are very few instances where TCDDs were reported at other sites.

e) In part V of its report, Dow cites several European authors who have reported the presence of PCDDs in fly ash from municipal incinerators and in fly ash from an industrial heating facility. Dow notes (p.22 of its report) that one of the authors postulates that the PCDDs are formed as a result of the thermal condensation of chlorophenols, although mention is made in the article that a thermal synthesis reaction involving inorganic chloride and organic material "was considered to be entirely possible." Dow, however, fails to discuss several other studies which indicate that the pattern of PCDD isomers identified in fly ash (from incinerators and heating facilities) was almost identical to that found when a mixture of polychlorophenates was pyrolyzed under controlled conditions. One of these papers goes on to state that available evidence indicates that commercial chlorophenols cannot be excluded as the precursor to PCDDs in fly ash. The information submitted by Dow appears to offer some degree of support for this statement. In general, fly ash from Dow's chemical waste incinerators show higher levels of PCDDs than does fly ash from its fossil fueled powerhouse. The difference may be related to the nature of the material being burned in each operation. One possible explanation is that the chemical wastes being burned in Dow's incinerators already contain PCDDs or PCDD precursors (polychlorophenoxy material)(i.e., wastes from Dow's chlorophenol production processes) and that these substances are the sources of the observed PCDDs.

f) Dow claims (on p.30 of its report) that "wipe testing and air monitoring data are strong evidence that (Dow) manufacturing plants do not emit levels of chlorinated dioxins sufficient to explain the finding of these compounds in the soil samples reported earlier." No scientific basis for this conclusion is provided in the data presented by Dow.

g) Dow reports (pp.33-35) trace quantities of PCDDs in scrapings taken from the inside of car and diesel truck mufflers. Does this necessarily mean, as Dow advances, that PCDDs are formed during combustion in the engine? If the car or truck was driven primarily in an industrial area or near sources that might be considered contaminated with PCDDs or PCDD precursors, airborne particulates containing these substances could be drawn into the air intake of the engine. Any PCDDs not decomposed in passage through the engine might then be deposited in the muffler. The statement (p.35) that PCDDs "are in particulate emissions from internal combustion engines" cannot be supported because vehicles' exhaust gases were not analyzed. The only conclusions that can be supported by the observations presented in this section are that (1) PCDDs have been identified in some muffler scrapings, however, (2) the source of the PCDDs is unknown.

h) Dow claims (pp.35-36) that soot collected from 2 fireplaces contains PCDDs; however, Dow offers no documentation of its claim that none of the wood burned in the fireplace "had been treated with any wood preservatives." Without such evidence, these results can not support Dow's thesis concerning the synthesis of PCDDs as a normal combustion by-product.

i) The geographic locations of the homes where fireplace soot and home electrostatic precipitator particulates were sampled may be important. This is of interest because the dust collected in the electrostatic precipitator (electronic air cleaner) had a higher concentration of PCDDs than the soot samples from the fireplaces (acknowledged sources of typical combustion by-products). A home electrostatic precipitator functions to a certain extent as a "high volume air sampler." In the case cited by Dow, the electrostatic precipitator was operated over a period of 6 spring and summer months. Thus, the precipitator particulates analyzed by Dow represent airborne material collected over a 6 month period which does not coincide with the months generally associated with heavy space heating-related combustion or home fireplace usage. Therefore, the PCDD values for the home electrostatic precipitator-collected particulates may, to a certain extent, represent the results of incidental ambient air "sampling" conducted at the site of the house.

j) Dow claims to have verified charcoal grills and cigarettes as sources of PCDDs. No evidence is presented to indicate that charcoal grills per se produce PCDDs, although an attempt is made to show that steaks cooked on charcoal grills contain newly synthesized PCDDs. The reported PCDD residue values, however, are identical or approximately equal to the analytical method's level of detection such that the reported values have limited analytical significance. In its cigarette assays, Dow reports finding picogram (10-12g) concentrations of PCDDs per cigarette (in trapped cigarette smoke particulates). However, several questions remain concerning the significance of this assay (e.g., results of unburned cigarette [control] analysis; geographic location of the conducted studies, etc.).

k) Dow reports that it identified polychlorinated dibenzofurans (PCDFs) in a number of the analyzed environmental samples. This finding should be investigated in more detail in light of the high toxicity of several PCDF isomers.

Overview

In summary, Dow's efforts "to identify the potential sources of the chlorinated dioxins" found in the Tittabawassee River indicate that it is possible that some portion, likely quite small, of the PCDDs identified in Tittabawassee River fish may have originally been formed and released to the environment as a combustion by-product rather than as a direct water effluent release as suggested by the information in the original submission. An important consideration, however, is that (with the exception of some OCDD) PCDDs were not detected in fish collected upstream from Dow's Midland, MI plant. Therefore, the available information (especially point (d) above) continues to suggest that the Dow Chemical Company's Midland, MI plant represents the major, if not the only, source of the TCDD contamination found in the Tittabawassee and Saginaw Rivers and Saginaw Bay in Michigan.

Current Production and Use

Polychlorinated dibenzo-p-dioxins are impurities that may be formed as unwanted contaminants under certain conditions during the production of chlorophenols. For example, 2,3,7,8-TCDD has been identified as a contaminant produced during the manufacture of 2,4,5,-trichlorophenol (2,4,5,-TCP) by current production methods. Because of this, 2,4,5-trichlorophenoxy acetic acid (2,4,5,-T), a registered pesticide derived from 2,4,5-TCP, is also potentially contaminated with 2,3,7,8-TCDD from the TCP intermediate.

Comments/Recommendations

a) This submission and status report should be transmitted to OPP, SAD, CAD, PID, LTAT (AD), OE, OWWM, OGC, OAQPS, ORD, OMSAPC, Region V, Michigan Department of Natural Resources, CPSC, USDA, FDA, OSHA, NIEHS, and NIOSH.

b) The submitter should be asked to provide the clarifications outlined in the status report and appendix. The submitter should be asked to prepare a written response to the questions; in addition, a meeting between Dow and EPA is suggested to provide a full discussion of the scientific aspects of the submission.

c) The development of a Sources/Effects Report (Phase I document) on PCDDs is recommended. This activity should also include consideration of the polychlorinated dibenzofurans (PCDFs).

d) Controlled combustion studies are needed to evaluate Dow's hypothesis that PCDD synthesis occurs in most combustion processes as well as to indicate the scope of any future monitoring effort.

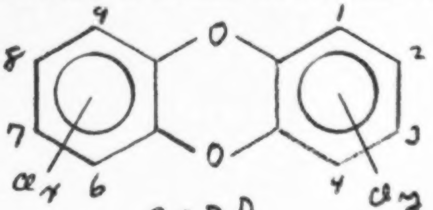
e) SAD (OPII) should initiate consideration of an appropriate monitoring program to determine the degree and extent of PCDD contamination in Midland, MI, as well as other current or historical sites of possible PCDD contamination (e.g., chlorophenol manufacturing, processing, or disposal sites). Environmental monitoring for PCDFs should also be considered. These efforts should be closely coordinated with ongoing or contemplated activities in other EPA offices (e.g., OPP, IERL/Cinn., OWWM, OAQPS, Region V, etc.).

f) OTS efforts to assess the sources and extent of PCDD and PCDF contamination as well as possible control needs should be closely coordinated with the efforts of other EPA offices and federal agencies by PID (OPII), possibly through intra-agency work groups and the Regulatory Development Work Group of IRLG, respectively. All of these efforts should be coordinated with the designated Headquarters Coordinator for all dioxin-related activities.

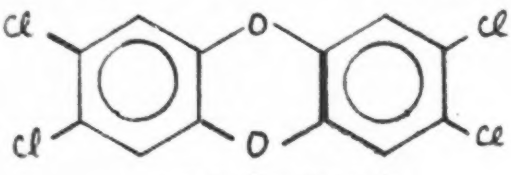
g) An 8(d) rule to collect health and safety studies on PCDDs and PCDFs should be considered.

APPENDIX (8EHQ-1178-0209) (Supplement)

The polychlorinated dibenzo-p-dioxins (PCDDs) are a series of tricyclic aromatic compounds which exhibit similar chemical and physical properties. The basic structure of PCDDs (as shown below) has eight possible points of chlorine substitution. From the monochloro to the octachloro derivatives, a total of 75 different positional isomers is possible.



PCDD



2,3,7,8-TCDD

The most extensively studied isomer of the PCDDs is 2,3,7,8-tetrachloro dibenzo-p-dioxin (2,3,7,8-TCDD), one of the most potent toxins presently known. The toxic effects induced by other TCDD isomers are less well characterized; however, they appear to exhibit a lesser degree of toxicity (both quantitatively and qualitatively) than 2,3,7,8-TCDD. For these reasons, the PCDD isomer attracting the greatest amount of Agency interest and activity is 2,3,7,8-TCDD.

Submission Evaluation (The following sections refer to subheadings in Dow's report.)

I. Building Blocks for Chlorinated Dioxins

The report's conclusions state that "conditions in a flame favor the occurrence of every conceivable type of chemical reaction" (p. 5), so that PCDDs may be formed in trace quantities wherever combustion occurs. The formation of polycyclic organic compounds during combustion is not a new finding. During coal combustion, the initial pyrolytic reaction can result in fragmentation, ring closures, condensation, and aromatization. The main products tend to be polynuclear ring compounds, occasionally containing nitrogen, oxygen, or sulfur, and simple compounds like H_2, H_2S, NH_3, CH_4, CO_2, etc.

Dow opens the discussion in Part I by establishing that inorganic chloride, gaseous products (SO_2, NO_x, CO, etc.), metals (V, Fe, Ni, etc.), and a wide variety of aliphatic and aromatic hydrocarbons are present during refuse- or fossil-fueled combustion reactions. The submitter then postulates that "at ultratrace levels, parts per billion, the number of compounds which may possibly form on particulate matter approaches or exceeds that presently known to man." While this statement may be true, it is never linked experimentally in Dow's submission to a demonstration that PCDDs will typically form during combustion reactions. Several authors (e.g., Buser et al. [Chemosphere, 7(2), 165, 1978]; Rappe et al. [Chemosphere, 7(3), 269, 1978], Stehl and Lamparski [Science, 196, 1008, 1977]; Ahling et al. [Chemosphere, 6(8), 461, 1977]; Buser and Rappe [Chemosphere, 7(2), 199, 1978]), on the other hand, have demonstrated in a laboratory setting that PCDDs can be formed during the pyrolysis of polychlorophenates (sodium salt) or polychlorophenoxy-containing materials (e.g., polychlorophenate-impregnated leaves, wood shavings, plywood, or waste oil). Rappe et al. (1978) stated that the concentration of PCDDs in the combusted samples represented a sizeable increase over the levels detected in the original polychlorophenate samples.

IV. Airborne Particulate Matter

Soil samples were collected from "13 different locations inside and outside (Dow's) Midland Plant" and analyzed for tetrachlorodibenzo-p-dioxin (TCDD), hexachlorodibenzo-p-dioxin (HxCDD), heptachlorodibenzo-p-dioxin (HpCDD), and octachlorodibenzo-p-dioxin (OCDD). Dow does not further identify the sites with respect to individual locations or distances from the plant or specific plant operations. The analytical results are presented in Table 1. Dow notes that the analytical method was not validated and, therefore, the results are qualitative only.

Table 1. PCDDs in 13 Midland Soil Samples[a] (taken from p.17 of Dow's report)

TCDD	HxCDD	HpCDD	OCDD
4/13	9/13	13/13	13/13

a) Collected from "inside and outside the Midland plant."

A second set of soil samples was collected in the same manner; 5 of these, "including the ones corresponding to those that previously gave positive TCDD results, were analyzed by a newly developed and validated analytical method." Dow goes on to state that this new method permitted the separation of the 2,3,7,8-TCDD from "almost all of its other 21 isomers." These results are summarized in Table 2. The specific sample selection sites represented by Table 2 should be clearly identified as to their placement with respect to the Dow plant.

Dow's claim at this juncture and at subsequent points in the submission that its analytical method permitted separation of TCDD isomers is not adequately supported by any of the figures shown in the submission or the attached appendices. Dow should be asked to provide a detailed description of the methods of extraction and analysis as well as the criteria utilized in the identification of TCDD isomers; e.g., (a) GC/HRMS (gas chromatography/high resolution mass spectroscopy) detection method, (b) elemental composition of molecular masses m/e 320, m/e 322, and m/e 324, (c) molecular ion Cl ratio, 0.8/1.0, (d) GC/HRMS retention time of test samples and confirmatory samples fortified with specific TCDD isomers, (e) m^+ - COCl loss, m/e 257, (f) use of and techniques for GC/HRMS double ion monitoring, (g) a description of the capillary column GC resolution measured in theoretical and/or effective plates, and (h) a description of the degree of GC resolution of specific TCDD isomers (Dow's tables should be more specific and indicate identified isomers and their contribution to the total value shown). In addition, Dow should clarify if the quantified values of TCDD isomers shown in its report are based on the response of specific isomers or if the values are normalized to the response of 2,3,7,8-TCDD. Finally, there is some question that the harsh (acid) conditions used for sample extractions may have resulted in PCDD formation from precursers or by dechlorination of higher PCDD isomers. Dow should be asked to confirm its findings by providing comparative results from neutral extraction procedures, if available.

The information needs outlined in the preceding paragraph concerning TCDD isomer values also apply in all cases to HxCDD, HpCDD, and OCDD isomer values reported in the Dow submission. Any available data on the presence of pentachloro dibenzo-p-dioxin isomers in environmental samples should also be requested.

Dow states on p.2 of its report that the "analytical methodology is so very new that it has not always been validated and not yet corroborated by other scientists." Limited analytical significance can be derived from results generated using nonvalidated procedures. In order to derive significant and valid analytical meaning and/or conclusions from the results of part per billion (ppb) and part per trillion (ppt) analysis for PCDDs, the results must be accompanied by (1) appropriate quality control results and (2) a complete description of the criteria utilized to identify and confirm the presence of PCDD residues. Furthermore, in cases where the reported PCDD residue levels and the limit of detection are of identical or approximately equal value, such numbers have uncertain analytical significance especially in situations when nonvalidated analytical methods are employed. PCDD values which are not greater than ten times (10X) the noise have been identified with an asterisk (*) in this status report. (When analyzing for trace levels of PCDDs, a signal to noise ratio of 2.5:1 is considered to be the level of detection; values below this ratio are reported as non-detected [ND]. When a sufficient amount of the sample and time are available to the analytical chemist, samples having a signal to noise ratio between 2.5:1 and 10:1 should be rerun a second time to verify the result. If the second analysis falls between 2.5:1 and 10:1, the two separate results and the average should be reported. Values resulting from a single analysis are not contested if the signal to noise ratio is at least 10:1 and the ratio of peak heights m/e 322:m/e 320 is in the proper isotopic proportion.)

Table 2. PCDDs in 5 Midland Soil Samples[a] (ppb)
(taken from Dow's Table III)

Sample	TCDD isomers other than 2,3,7,8-TCDD	2,3,7,8-TCDD[b]	HxCDD	HpCDD	OCDD
1	17	16	280	3200	20500
2	9	6	40	470	2500
3	18	100	120	650	6300
4	13	16	280	240	11700
5	0.8	0.3	7	70	490

a) Taken from "inside and outside the Midland plant."

b) Values are reportedly based on the "separation of the 2,3,7,8-TCDD from almost all of its 21 other isomers" (see discussion in the text).

Next, dust samples were collected at various locations in a "Dow research building" and subsequently extracted and analyzed using a method reportedly separating "the 2,3,7,8-TCDD from all but about 11 of its isomers". (As discussed earlier, this statement should be supported by documentation indicating that eleven TCDD isomers plus the 2,3,7,8-TCDD equals one fraction. Dow's statement to that effect is not sufficient.) The results of this work are presented in Table 3. Dow should be asked to clearly describe what it means by the term "air intake." Does the PCDD contamination of this air intake dust result from the handling of "inside" or "outside" air?

Table 3. Dust Samples from a Dow Research Building (ppb)
(taken from Dow's Table IV)

Sample	TCDD isomers other than 2,3,7,8-TCDD	2,3,7,8-TCDD[a]	HxCDD	HpCDD	OCDD
1st floor	0.5	1.0	18*	240*	960
1st floor	2.3	2.3	28	520	3800
2nd floor	1.3	2.6	11*	140	650
2nd floor	-	0.7	9*	250	2600
2nd floor (2 weeks after cleaning)	1.5	1.2	20*	320	2000
air intake	2.3	2.3	35*	1200	7500

a) Values are reportedly based on the "separation of the 2,3,7,8-TCDD from all but about eleven of its isomers" (see discussion in the text).

*Value is close to the detection limit for the analytical method employed (signal is less than 10X noise).

Additional dust samples from Midland and an unspecified "metropolitan area" were collected and analyzed for control purposes. These samples did not satisfy this need, therefore, dust and soil samples were collected from additional, vaguely characterized ("rural," "urban," and "major metro") sites. Table 4 represents a composite presentation of these results.

Dow concludes (p.21) that these data (Tables 1-4) "strongly support the conclusion that chlorinated dioxins are produced in incinerators and fossil fueled powerhouses as a consequence of combustion. These results indicate that chlorinated dioxins are more widespread than previously anticipated and are perhaps ubiquitous". In point of fact, the results presented offer no scientific documentation (other than weakly circumstantial evidence) relating Dow's observations on PCDD contamination of soil and dust to the synthesis of PCDDs as a by-product of incineration or power generation. There is some circumstantial evidence that the HxCDD, HpCDD, and OCDD identified in the soil samples from the urban and the metropolitan areas may be associated with the operation of a powerplant and an incinerator, respectively. This, however, does not demonstrate that the presence of these substances results from their synthesis as a normal combustion by-product. Table 5 presents a comparison of the total number of PCDD-positive samples collected from the Midland, MI area with those collected from other locations. From Table 5, the following observations, contrasting Dow's claims, can be supported:

(a) Midland, MI, and especially the area around the Dow plant, exhibits the greatest evidence for gross PCDD contamination among the various locations sampled. This is true both in terms of the proportion of samples in which PCDDs were detected and the degree of contamination evident in individual samples. In the latter case, the levels of PCDDs found in Midland are 2-4 orders of magnitude greater than those reported at other locations. The fact that much higher levels of PCDDs were found in the soil and dust around the Dow chemical plant as compared to urban, metropolitan, and rural areas suggests that polychlorophenol production or some other activity (spills, plant emissions, combustion of chemical wastes, etc.) at the Dow plant may be the source of the observed PCDD contamination.

(b) To the extent that TCDDs, especially 2,3,7,8-TCDD, are the PCDDs of greatest Agency concern, the levels of TCDDs identified in Midland soil and dust samples indicate that this area represents a definite TCDD "hot spot." In comparison, there are very few instances where TCDDs were reported at other sites.

V. Incineration

In its introduction to this section, Dow cites several European authors who have reported the presence of PCDDs in fly ash and flue gas from municipal incinerators (Olie et al., Chemosphere, 6(8), 455, 1977), in fly ash alone from a municipal incinerator, and in fly ash from an industrial heating facility (Buser et al., Chemosphere, 7(2), 165, 1978). Dow notes (p.22) that Olie et al. postulate that the PCDDs are formed as a result of the thermal condensation of chlorophenols, although mention is made in the article that a thermal synthesis reaction involving inorganic chloride and organic material (especially hexachlorobenzene and other highly chlorinated benzene) "was considered to be entirely possible." Dow, however, fails to discuss aspects of the Buser et al. (1978) study as well as a Rappe et al. (Chemosphere, 7(3), 269, 1978) study which indicate that the pattern of PCDD isomers identified in fly ash (from incinerators and heating facilities) was almost identical to that found when a mixture of polychlorophenates was pyrolyzed under controlled conditions. Buser et al. go on to state

Table 4. PCDDs in Soil and Dust Samples (ppb)
(taken from Dow's Tables III, IV, V, and VI)

Sample	TCDD	HxCDD	HpCDD	OCDD
Midland				
(1)	0.03*	0.2	2.3	19
(2)	0.04*	0.4	3.9	31
(3) See Tables 2 and 3 for other Midland values.				
Rural				
(1)	ND	ND	ND	ND
(2)	ND	ND	ND	0.1*
(3)	ND	ND	ND	ND
(4)	ND	ND	0.3*	0.10
(5)	ND	ND	0.05*	0.17
(6)	ND	ND	0.02*	0.16
(7)	ND	ND	ND	ND
(8)	ND	ND	0.03*	0.11*
Urban[a]				
(1)	ND	1.2	1.6	2.0
(2)	ND	ND	0.23	0.96
(3)	ND	0.03*	0.30	2.0
(4)	ND	ND	ND	0.05*
(5)	ND	ND	0.035*	0.20
Major Metro[b]				
(1)	ND	ND	0.14	0.41
(2)	ND	0.03*	0.24	1.0*
(3)	0.03	0.31	3.3	22.0
(4)	ND	0.12*	1.4	8.5
(5)	0.006*	0.14	0.85	3.2
(6)	0.005*	0.04*	0.36	1.4
(7)	0.005*	0.09*	0.96	6.0
(8)	ND	0.02*	0.10	0.35
(9)	ND	ND	0.64	2.6
(10)	0.04*	0.34*	3.2	8.2
(11)	ND	0.09	0.8	3.5
(12)	ND	0.1	0.3	0.4
(13)	ND	ND	ND	ND
(14)	ND	0.3	1.0	3.8

a) Samples collected from between 300-1500 feet from a "powerhouse."

b) Samples collected from between 100-3300 feet from an "incinerator" (except for (14) which was collected at a "metro river shoreline").

*Value is close to the detection limit for the analytical method employed (signal is less than 10X noise).

ND) Signal not detected at 2.5X noise.

Table 5. A Comparison of PCDD-Positive Soil and Dust Samples/ Total Analyzed from Different Locations

Location	TCDD Isomers	2,3,7,8-TCDD	HxCDD	HpCDD	OCDD
Midland, MI	16/25[a] (64%)[b] (0.03-18)[c]	11/11[d] (100%) (0.3-100)	22/26 (88%) (0.2-280)	26/26 (100%) (2.3-3200)	26/26 (100%) (19-20500)
Other Locations (total)	5/23 (22%) (0.005-0.04)		10/23 (43%) (0.02-1.2)	18/23 (78%) (0.02-3.3)	20/23 (87%) (0.05-22.0)
Rural	0/8 (0%)		0/8 (0%)	4/8 (50%)	5/8 (63%)
Urban	0/5 (0%)		2/5 (40%) (0.03-1.2)	4/5 (80%) (0.035-1.6)	5/5 (100%) (0.05-2.0)
Major Metro	5/10 (50%) (0.005-0.04)		8/10 (80%) (0.02-0.34)	10/10 (100%) (0.10-3.3)	10/10 (100%) (0.35-22.0)

a) This entry reportedly represents TCDD isomers other than 2,3,7,8-TCDD; i.e., the analytical method is claimed to have achieved some degree of TCDD isomer separation. All other entries in this column apparently represent aggregate totals for all TCDD isomers.

b) Percent (PCDD-positive samples/location). Note that for purposes of this table, asterisked (*) values taken from Tables 3 and 4 were considered "positive" despite questions as to the analytical significance of some of these values.

c) Range of detected levels in ppb.

d) This entry reportedly represents some degree of separation of the 2,3,7,8-TCDD from other TCDD isomers.

that available evidence indicates that commercial chlorophenols cannot be excluded as the precursor to PCDDs in fly ash. As noted briefly in the dicussion of part I, Rappe et al. (among others) have also shown that the combustion of leaves, wood shavings, plywood, or waste oil containing chlorophenates can yield a variety of PCDD isomers in the ash. Dow reports that it operates two major chemical waste incinerators at Midland, MI. The first is a large stationary tar burner and the second is a rotary kiln incinerator. Samples of particulate matter were removed from the stacks and analyzed for PCDDs. The resulting data are summarized in Table 6. Particulates from the stationary tar burner and the rotary kiln incinerator show no detectable TCDD when operated with supplementary fuel. (The levels of the other PCDD isomers are, nonetheless, still relatively high.) However, when the rotary kiln incinerator is operated without supplemental fuel, extremely high levels of TCDDs (and other PCDDs as well) are detected. Several important questions immediately arise. Does Dow generally operate the rotary kiln incinerator with supplemental fuel when using it for chemical waste incineration? Dow should specify the types and conditions of operation of air pollution control devices (including scrubbers) used to control particulate emissions from these incinerators? It is also important to know whether the particulate samples were collected from the stacks "upstream" or "downstream" from the scrub water inlet (i.e., before or after scrubbing) (see part VII below). In addition, were the particulates scraped from the walls of the stacks or were they collected from the gas phase or an electrostatic precipitator (or some other pollution control device).

VI. Powerhouses

Particulates from a Dow Midland powerhouse stack were collected and analyzed. Fuel oil and coal are burned in the powerhouse. The results of the PCDD analyses are presented in Table 7.

It is not clear why the TCDD isomers (other than 2,3,7,8-TCDD which was not detected) are so high (compared to other PCDDs) in the powerhouse particulate. Likewise, if Dow's thesis concerning the synthesis of PCDDs as a normal combustion by-product is correct, why do the incinerators as opposed to the powerhouse, in general, show higher levels of PCDDs in the fly ash? The difference may be related to the nature of the material being burned in each operation. One possible explanation is that the chemical wastes being burned in the incinerators already contain PCDDs or PCDD precursors (polychlorophenoxy material); that is, the wastes

Table 6. PCDDs in Particulate Matter from Dow Incinerators (ppb) (taken from Dow's Tables VIII and IX)

Sample	TCDD isomers other than 2,3,7,8-TCDD	2,3,7,8-TCDD[a]	HxCDD	HpCDD	OCDD
	Stationary tar burner (with supplemental fuel)				
(1)	ND	ND	20	90	330
(2)	ND	ND	7	125	440
(3)	ND	ND	6	60	190
(4)	ND	ND	4	160	320
(5)	ND	ND	1	27	250
	Rotary kiln incinerator (without supplemental fuel)				
(1)	1,800	2,300[b]	13,000	110,000	180,000
(2)	5,000	8,200[b]	65,000	510,000	310,000
(3)	3,300	110	1,300	2,000	3,000
(4)	12,000	ND	5,600	37,000	59,000
	Rotary kiln incinerator (with supplemental fuel)				
(1)	ND	ND	1.4	13.0	30.0
(2)	ND	ND	ND	4.0	9.0
(3)	ND	ND	ND	6.0	15.0
(4)	ND	ND	5.0	27.0	170.0
(5)	ND	ND	4.0	110.0	950.0

a) Dow's report does not specify the number of TCDD isomers represented by values in this column.

b) These values may be high; see Dow's comment on p.24.

Table 7. PCDDs in Particulates from a Powerhouse Stack (ppb) (taken from Dow's Table X)

TCDD isomers other than 2,3,7,8-TCDD	2,3,7,8-TCDD[a]	HxCDD	HpCDD	OCDD
38*	ND	2	4	24

a) Dow's report does not specify the number of TCDD isomers represented by this value.

*Value is close to the detection limit for the analytical method employed (signal is less than 10X noise).

result from Dow's chlorophenol production processes. Rappe et al. (1978) offer several different mechanisms for the formation of PCDDs given the presence of pre-formed PCDDs or PCDD precursors. The 3 proposed mechanisms are:

a) by dimerization of chlorophenates,

b) by dechlorination of higher chlorinated PCDDs, and

c) by cyclization of PCDD precursors.

VII. Waterborne Particulates

Composite scrubber water samples were taken from the rotary kiln incinerator during the same sampling reported in part V of the report. Particulates were filtered from the scrubber water and both the particulates and the water filtrate were analyzed for PCDDs. (Note that Dow's analytical method ML-AM-78-63 [Dow's Appendix B3] [specific for soil, dust, and particulate samples] was used to analyze the scrubber water particulates. Dow, however, does not specify the analytical method used to examine the water filtrate. This should be clarified.) Table 8 presents the results of these analyses and also compares the scrubber water PCDD values with those reported for rotary kiln fly ash (previously reported in Table 6). When comparing the PCDD levels reported in the different samples, it should be noted that there is no indication whether all the samples were taken within a short time of each other or days apart. In addition, it is not clear if the same wastes were being burned or if similar incineration conditions existed when the respective samples were taken. Dow should be asked to provide a complete description of the operating conditions (normally and during sampling), nature of the wastes burned normally and during sampling, and use of air pollution control devices on the rotary kiln incinerator. Dow should also describe the method of disposal used for scrubber water particulates and any other solid wastes resulting from these incineration procedures.

In addition, Dow should provide the same information for its stationary tar burner.

VIII. Combustion of Dioxins

The U.S. EPA report entitled "At-Sea Incineration of Herbicide Orange Onboard the M/T Vulcanus" (EPA-600/2-78-086) was published in April, 1978. A copy of this publication should be transmitted to Dow in any followup to this submission.

Table 8. PCDDs in Rotary Kiln Scrubber Water and Stack Fly Ash (ppb)
(taken from Dow's Tables IX, XI, and XII)

Without supplemental fuel

Sample		TCDD isomers other than 2,3,7,8-TCDD	2,3,7,8-TCDD	HxCDD	HpCDD	OCDD
A) scrubber water particulates		300	2,200[a]	3,400	26,000	42,000
B) scrubber water filtrate		0.0018*	0.001[a]*	0.005	0.24	0.026
C) fly ash particulates[b]	(1)	1,800	2,800	13,000	110,000	180,000
	(2)	5,000	8,200	65,000	510,000	810,000
	(3)	3,300	110	1,300	2,000	3,000
	(4)	12,000	ND	5,600	37,000	59,000
With supplemental fuel						
D) scrubber water particulates		14	32[a]	200	970	1,200
E) fly ash particulates[b]	(1)	ND	ND	1.4	13.0	30.0
	(2)	ND	ND	ND	4.0	9.0
	(3)	ND	ND	ND	6.0	15.0
	(4)	ND	ND	5.0	27.0	170.0
	(5)	ND	ND	4.0	110.0	950.0

a) The analytical method reportedly did not separate the 2,3,7,8-TCDD from 11 other isomers.

b) The high results reported for 2,3,7,8-TCDD "are probably due to analysis by the non-specific GC-MS packed column method" (see p.24 of Dow's report). In addition, Dow's report does not specify the number of TCDD isomers represented by the values in the 2,3,7,8-TCDD column.

*Value is close to the detection limit for the analytical method employed (signal is less than 10X noise).

IX. Michigan Division Manufacturing Plants as Potential Sources of Trace Levels of Chlorinated Dioxins in the Environment

A. Wipe testing

The fact that 8 out of 230 wipe tests gave positive results for TCDD merits consideration. The wipe test area, 100 cm^2, is roughly equivalent to the area of a human hand and 1 ug TCDD may be approaching a toxic level (LD_{50} male guinea pig, 0.6 ug/kg). The text indicates that the analyses were conducted by gas chromatography with a detection limit of 1 ug/wipe; however, Appendix B4 states that analyses were carried out by GC-MS with a level of detection of 0.1 ug/sample. These points should be clarified. In addition, information as to the suitability of the wipe test methodology to actual conditions which might be encountered in the Michigan Division manufacturing plants should be provided by Dow.

B. Air monitoring

The method of sample collection is not described in sufficient detail in Dow's report. Are particulates sampled during this procedure? Also, note that part of the report appears to have been omitted at the top of page 30. This omission should be clarified.

A statement made on p.30 could be misleading. "The few molecules that take this path (vaporization) will be destroyed by photodegradation within a few hours even when the day is cloudy (23)." This statement could lead one to believe that if PCDDs are released to the atmosphere they will be destroyed. If these compounds are really volatilized then they could possibly be decomposed; however, if they are adsorbed onto fly ash or other particulate matter they would probably not be destroyed photolytically or to only a limited extent. In addition, the applicability of Dow's reference 23 (Nash and Beall, 1977) to the above quotation is not clear; clarification is required.

Dow claims on page 30 that the "wipe testing and air monitoring data are strong evidence that (Dow) manufacturing plants do not emit levels of chlorinated dioxins sufficient to explain the finding of these compounds in the soil samples reported earlier." No scientific basis for this conclusion is provided in the data presented by Dow. In the first place, there is no way to compare the ppb levels of TCDD found in soil and dust with the "1 ug/wipe" values reported for the wipe testing. To support its conclusion, Dow would either have to "wipe test" soil samples or, preferably, analyze pesticide plant wipes on a ng/g (ppb) basis. Handled in any other way, one is left to compare apples with oranges. Similarly, there is no way to compare Dow's plant air monitoring data with the PCDD values reported for soil and dust samples collected outside the plant. Furthermore, there is no indication as to the location of each wipe test or air sampling site in relation to the various operations involved with polychlorophenol production or handling. Dow should present a grid of its polychlorophenol production and handling sites and identify the sampling points for the 230 wipe tests and 35 air monitoring assays. Any available monitoring data (wipe tests, air sampling, etc.) regarding Dow laboratory facilities as potential sources of PCDD contamination should also be provided.

C. Aqueous streams

Further information on the "tests" for primary organics reported in this section should be provided by Dow.

D. Cooling waters

The results of Dow's analyses of cooling tower "residues" for PCDDs are shown in Table 9. It is important to know if these towers cool steam or other effluent streams from the polychlorophenol facilities, the power plants, or the incinerators discussed earlier. Dow should provide a map of its plant site showing the location and relationship of each cooling tower, incinerator, powerhouse, and production facility (especially those producing or handling polychlorophenols or derivatives). In addition, Dow should further describe what it means by "cooling tower residue"; is this a water or sediment sample? Dow should also support with analytical results its statement on page 30 that "product leaks to cooling towers" do not occur.

Table 9. PCDDs in Cooling Tower Residues
(taken from Dow's Table XIII)

Location	TCDD	HxCDD	HpCDD	OCDD
Northwest	ND (L.O.D.[a] 0.05)	ND	25	119
East	ND (L.O.D. 0.05)	ND	12	56
Central #1	1.6*	10	20	107
Central #2	6.0	-	-	-

a) Level of detection was 0.05 ppb.

*Value is close to the detection limit for the analytical method employed (signal is less than 10X noise).

Dow states in this section (p.30) that "(it) was assumed that cooling tower residues would be positive for chlorinated dioxins." Dow should be asked to provide the basis for this assumption. On page 31, Dow states that "(from) these data (see Table 9), we conclude that the presence of chlorinated dioxins in cooling tower residues confirms the airborne route." Dow should be asked to explain the term "airborne route" and specify the sources of the PCDDs found in cooling tower residues.

Central to this discussion of cooling towers is the assumption that Dow does not use 2,4,5-trichlorophenol in its cooling tower waters as a biocide. Dow should be asked to clarify this point. In the event that Dow does use 2,4,5-trichlorophenol, then the PCDDs found in the cooling tower residues may not be from airborne particulates.

E. Various aqueous streams

For this part of the report, Dow sampled various aqueous streams in its Midland plant. The samples were collected from sewer lines before they entered the waste treatment plant. The samples were selected on the basis of "the stream source and its rate of flow." This vague description of the samples is inadequate. Do any of the sampled aqueous streams come directly from chlorophenol production or handling operations? Do these samples include particulates? If not, these analyses have limited value. Dow indicates it employed analytical method ML-AM-73-97 (Appendix B2) for the analyses reported in this section. The method is specified for the analysis of fish and soil samples; its applicability to aqueous stream analysis should be demonstrated.

On page 32, Dow states that in the case of sewer water analyses, "the source of the chlorinated dioxins cannot be reliably determined by the ratio of the various species." However, in immediate juxtaposition to this statement is Dow's remark (p.33) that "(with) the exception of sewer water samples 2 and 4 and cooling tower central #1, the data indicate that the chlorinated dioxins are from the same source as those on soil and dust. The exceptions have species whose ratios are similar to those found on particulates from the powerhouse." Dow should clarify the meaning and significance of these remarks. Insofar as Dow states in the Introduction (p.2) that "(samples) were not taken by statistical design and results are not intended to represent anything other than the sample analyzed," how can Dow proceed to compare the PCDD ratios from one sample with those from another? Moreover, how can Dow draw conclusions from such a comparison? Furthermore, how can the submitter state in one paragraph that a comparison of PCDD ratios will not yield a "reliable" determination of the source, but then in the next paragraph draw 2 separate and distinct conclusions from these same ratios.

Another statement on page 33 deserves comment: "The (PCDD) ratios (found in the cooling tower or sewer waters) do not fit those normally found in any manufactured product." The meaning of the phrase "normally found in any manufactured product" is not clear because no known polychlorophenol product or derivative contains both TCDD and OCDD. In general, trichlorophenol contains TCDD, while pentachlorophenol contains HxCDD, HpCDD, and OCDD but no TCDD. If Dow is aware that any of its products contain both TCDD and OCDD (or for that matter, both trichlorophenol and pentachlorophenol), it should so inform the Agency. Dow should describe the spatial relationship of its trichlorophenol production facility to the location of its pentachlorophenol production site. Are any waste water lines common to both? What is the composition of the chlorophenol wastes incinerated by Dow? Do these wastes represent a composite of both trichlorophenol and pentachlorophenol wastes? Or are wastes from the two chlorophenol production processes burned sequentially in the same incinerator?

X. Chlorinated-dioxin Containing Particulate Matter from Mufflers

Dow reports trace quantities of PCDDs in scrapings taken from the inside of car and diesel truck mufflers. The cars sampled were equipped with and without catalytic converters. Does this necessarily mean, as Dow advances, that PCDDs are formed during combustion in the engine? If the car or truck was driven primarily in an industrial area or near sources that might be considered contaminated with PCDDs or PCDD precursors, airborne particulates containing these substances could be drawn into the air intake of the engine. Any PCDDs not decomposed in passage through the engine might then be deposited in the muffler. The statement (p.35) that PCDDs "are in particulate emissions from internal combustion engines" cannot be supported because vehicles' exhaust gases were not analyzed. The only conclusions that can be supported by the observations presented in this section are that (1) PCDDs have been identified in some muffler scrapings, however, (2) the source of the PCDDs is unknown.

The analytical method (GC-EC vs. GC-MS) used to detect TCDD isomers was not specified in Dow's Table XV; this information should be provided.

XI. Commonplace Sources

1. Soot from fireplaces

Dow reports that soot collected from 2 fireplaces contains PCDDs. The results are presented in Table 10. Dow states (pp. 35 and 36) that none of the wood burned in the fireplaces "had been treated with any wood preservatives." Dow should be asked to document this statement.

2. Particulate matter from a home electrostatic precipitator

The results of PCDD analysis performed on this sample are presented in Table 10.

Table 10. PCDDs in Fireplace Soot and Particulates from a Home Electrostatic Precipitator (ppb) (taken from Dow's Table XVI)

Source	TCDD isomers other than 2,3,7,8-TCDD	2,3,7,8-TCDD[a]	HxCDD	HpCDD	OCDD
fireplace A	0.27	0.1*	3.4	16	25
fireplace B	ND	ND	0.23	0.67	0.89
electrostatic precipitator	0.40*	0.6*	34	430	1300

a) Dow's report does not specify the number of TCDD isomers represented by values in this column.

*Value is close to the detection limit for the analytical method employed (signal is less than 10X noise).

The geographic location of each house sampled in Table 9 should be provided by Dow. Were these houses in the Midland, MI area, and if so were they near Dow's plant? This is of some interest because the particulate collected in the electrostatic precipitator (electronic air cleaner) have a higher concentration of PCDDs than the soot samples from the fireplaces (acknowledged sources of typical combustion by-products). A home electrostatic precipitator functions to a certain extent as a "high volume air sampler." In the case cited by Dow, the electrostatic precipitator was operated over a period of 6 spring and summer months. Thus, the precipitator particulates analyzed by Dow represent airborne material collected over a 6 month period which does not coincide with the months generally associated with heavy space heating-related combustion or home fireplace usage. Therefore, the PCDD values for the home electrostatic precipitator-collected particulates may, to a certain extent, represent the results of incidental ambient air "sampling" conducted at the site of the house. For this reason, the location of this particular house may be important.

3. Charcoal broiled steaks

The results of this assay are presented in Table 11. As can be seen, all samples were negative for TCDD and HxCDD and in only one case (that being an "over-done" steak) did the GC-MS (gas chromatography-mass spectrometry) method of analysis "support" the GC-EC (gas chromatography-electron capture) result. However, even in that case (as in all other instances reported in the table), the reported OCDD residues and the level of detection are of identical or approximately equal value such that the number has limited analytical significance. Furthermore, the blank sample (uncooked steak?) had a concentration of 6 ppt of OCDD (determined by GC-EC, although the value is so close to its level of detection as to have limited analytical significance). Was this blank (uncooked steak?) contaminated with pentachlorophenol, a widespread environmental contaminant?

Table 11. PCDD Content of Charcoal Grilled Steak (ppb)
(taken from Dow's Table XVII)

Sample	TCDD isomers other than 2,3,7,8-TCDD	2,3,7,8-TCDD	HxCDD	HpCDD		OCDD	
				GC-MS	EC	GC-MS	EC
blank	ND	ND	ND	ND	0.004*	ND	0.006*
medium-rare	ND	ND	ND	ND	0.003*	ND	0.005*
well-done	ND	ND	ND	ND	0.006*	ND	0.012*
over-done	ND	ND	ND	ND	0.007*	0.029*	0.016*

*Value is close to the detection limit for the analytical method employed (signal is less than 10X noise).

XII. Cigarette Smoke

Cigarette smoke particulates were also analyzed for PCDDs; the results are presented in Table 12.

Table 12. PCDDs in Cigarette Smoke Particulates
(10^{-12} g/cigarette)
(taken from Dow's Table XVIII)

Location of purchase and test	TCDD isomers other than 2,3,7,8-TCDD	2,3,7,8-TCDD[a]	HxCDD	HpCDD	OCDD
urban 1	ND	ND	8.0	8.5	50
urban 2	ND	ND	4.2	9.0	18

a) Dow's report does not specify the number of TCDD isomers represented by values in this column.

Several questions arise concerning this assay. Are PCDDs or PCDD precursors present in unburned cigarettes (possibly due to pesticide use of polychlorophenols or derivatives)? How does 10^{-12} g/cigarette relate to 10^{-12} g/g (or ppt)? The cigarettes were smoked in two unidentified "urban locations"; why was this method chosen over a controlled study conducted in a lab? Were the cigarettes "smoked" near Midland, MI or some other industrial site; in other words, how would the results of ambient air sampling at the two locations compare with the reported cigarette-PCDD values? Do the individual results in Dow's Table XVIII represent GC-EC or GC-MS analysis? Are the methods confirmatory in their results?

XIII. Other Chlorinated Compounds Identified

The polychlorinated dibenzofuran (PCDF) findings reported in this section should be investigated further. Several investigators (Buser *et al.*, *Chemosphere*, 7(5), 419, 1978a; Rappe *et al.*, *Chemosphere*, 7(5), 431, 1978; Buser *et al.*, *Chemosphere*, 7(5), 439, 1978b; Rappe *et al.*, *Chemosphere*, 6(5), 231, 1977; Buser *et al.*, *Chemosphere*, 7(1), 109, 1978c; etc.) have identified PCDFs in polychlorophenol pesticides, saw dust from polychlorophenol-treated wood, fly ash, PCB mixtures, and as a by-product of the combustion of PCBs. Of significance are the Buser *et al.* (1978a) findings that the *major* PCDF constituents (*in fly* ash as well as in PCB pyrolyzates) tended to be the most toxic PCDF isomers (2,3,7,8-tetra-CDF; 1,2,3,7,8-penta-CDF; and 2,3,4,7,8-penta-CDF). This contrasts with the Buser et al. (1978a) findings on the distribution of PCDD isomers in polychlorophenate pyrolyzates where the less toxic isomers were in greatest concentration.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: August 16, 1978

SUBJECT: Status Report 8EHQ-0778-0210

Approved ______________

Revision Needed ______________

FROM: Frank D. Kover
Assessment Division, OTE/OTS

TO: Joseph J. Merenda, Director
Assessment Division, OTE/OTS

Submission Description

Results of an acute oral toxicity study of VEL 4582 (S-methyl-n(alpha'-methyl-N'-methylcarbamyloxymethylene) oxy-thioacetimidate) in rats. The name and molecular structure presented by the submitter do not appear to agree with each other. This will have to be clarified in a follow-up letter.

Submission Evaluation

The purity of the test compound is suspect. The report speculates that the material "may contain small amts of Hydrocarbon (?) and N-Hydroxy-methyl deriv." The test material is characterized only as a "gold color viscous liquid," while the formula would suggest that VEL 4582 is a solid.

The LD_{50} data indicate that VEL 4582 is a significantly toxic compound when taken by mouth. It is more toxic (in terms of lethality) than morphine or barbiturates.

It would be useful to have microscopic sections studied for evidence of pathological changes in the organs of animals that died 1 to 3 days after receiving VEL 4582.

Current Production and Use

No information was located in the secondary sources consulted.

Comments/Recommendations

(a) The discrepancy between the chemical name and the molecular structure must be clarified by the submitter.

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*NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

EPA FORM 1320-6 (REV. 3-76)

(b) The submitter should be asked to provide a description of the uses of this material.

(c) The submitter should provide histopathological findings on the test animals, if available. In the event that this work has not been done, the submitter should consider initiation of these studies.

(d) The submitter should be asked to support his contention that the information presented in this submission reasonably supports a conclusion of substantial risk.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: DEC 4 1978

SUBJECT: Status Report* 8EHQ-0778-0211

Approved ______________

Revision Needed ______________

FROM: Frank D. Kover
Assessment Division, OTE/OTS

TO: Joseph J. Merenda, Director
Assessment Division, OTE/OTS

Submission Description

Results of teratogenicity testing of MMT (methylcyclopentadienyl manganese tricarbonyl) in rats.

Submission Evaluation

An independent laboratory conducted this study under contract to the submitter. The data indicate to the performing laboratory that the manganese compound is a teratogen for rats. This is in addition to the well-known toxicity of the compound. The identification of MMT as a teratogen raises the suspicion of carcinogenicity.

The submission does not make it clear who is questioning the reliability of the experiment. Is it the performing laboratory or the submitter's in-house TSCA committee? EPA will need to see the final report submitted by the performing laboratory.

Current Production and Use

MMT is used as a gasoline anti-knock agent, either alone or admixed with tetraethyllead. Current consumption of MMT is not known.

Comments/Recommendations

The submitter notes that additional information is expected shortly and a follow-up report will be filed with EPA within 90 days. Therefore, pending receipt of the final report, it is recommended that:

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*NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

1) This submission and status report should be transmitted to OSHA, NIOSH, and OAQPS, OMSAPC, and ORD (fuel and fuel additive registration).

2) Request follow-up report from submitter (90 days have passed since receipt of this submission).

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: AUG 03 1979

SUBJECT: Status Report* 8EHQ-1078-0211
Supplement

Approved JM 9/12/79

Revision
Needed

FROM: Frank D. Kover, Acting Chief
Chemical Hazard Identification Branch

TO: Joseph J. Merenda, Director
Assessment Division

Submission Description

The submission presents a summary of the results of a teratology study conducted in rats with MMT (methylcyclopentadienylmanganesetricarbonyl). The submitter has concluded, on the basis of their audit of the results, that its earlier preliminary conclusion that MMT presents a substantial risk of injury is not supported by the final analysis of the study. The preliminary report (8EHQ-0778-0211) on this study was received earlier under Section 8(e) and a status report was prepared at that time.

Submission Evaluation

MMT produced clear toxicity to the female rats and the fetuses they were carrying. This toxicity appears to be dose related. The bleeding from the nose and the difficulty in breathing are suggestive of lung damage. The urinary incontinence is in keeping with the known central nervous system effects of manganese. The adrenal enlargement observed in rats at 5, 10, and 20 mg/kg/day is probably a reflection of an alarm reaction due to destruction of body tissues.

The rats administered 20 mg/kg/day exhibited greater toxicity than those administered 5 or 10 mg/kg/day. The cachexia (general wasting), alopecia (hair loss), and dehydration suggest severe nutritional disturbances.

If the investigators mean that the usual incidence of fetuses with variations in ossification was increased by MMT at a maternal dose of 20 mg/kg/day, then this is significant effects attributed to MMT in this in vivo study, was submitted appropriately under Section 8(e) of the Toxic Substances Control Act (PL 94-469).

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*NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

Part V of the March 16, 1978 Federal Register (Vol. 43, No. 52) "Statement of Interpretation and Enforcement Policy" states that the Agency considers the human health effects for which substantial-risk information must be reported to include "Any pattern of effects or evidence which reasonably supports the conclusion that the chemical substance or mixture can produce cancer, mutation, birth defects or toxic effects resulting in death, or serious or prolonged incapacitation" (43 FR 11112). Additionally, the introduction to Part V states that the "information respecting these effects can be obtained either directly, by observation of their occurrence, or inferred from designed studies" (43 FR 11112). These designed, controlled studies include in vivo and in vitro experiments and tests.

Therefore, it is the Agency's preliminary determination that the toxicological information as submitted (8EHQ-1078-0211 Supplement) appears to reasonably support a conclusion of substantial risk of injury to health or the environment.

a) The submitter should be requested to provide a full copy of the final results of their teratology study, including the test protocols.

b) The inconclusive nature of the teratology results from this study of MMT in rats may suggest a possible need for more definitive testing.

c) This submission and status report should be transmitted to OSHA, NIOSH, OAQPS, OMSAPC, and ORD.

and perhaps the teratological conclusions are more than tenuous. The reported 39% fetal incidence of either ocular or vertebral malformations has to be accounted for.

The observation that the 20 mg/kg/day dose group had excessive maternal toxicity and embryotoxicity (thereby limiting the number of litters and fetuses available for examination), and the associated "high incidence" (39%) of developmental malformations among the remaining fetuses, cannot be used to justify the statement in the submitter's cover letter that "the data does (Sic) not support a conclusion that MMT is a teratogen." On the contrary, the report strongly suggests that better studies will have to be carried out before it can be said that MMT is not a teratogen.

Current Production and Use

MMT has been used as a gasoline anti-knock agent, either alone or admixed with tetraethyl lead. Provisions of the 1977 amendments to the Clean Air Act resulted in a ban on the use of MMT in unleaded gasoline sold in the U.S. after September 15, 1978. However, EPA recently (May 31, 1979) suspended enforcement of the ban on MMT in unleaded gasoline until October 1, 1979 in order to increase the supplies of unleaded gasoline during this summer, thus minimizing the problem of pollution-control catalysts on automobiles being damaged by leaded gas. The current production volume of MMT is not known.

Comments/Recommendations

EPA disagrees with the submitter's statement that "the data does (Sic) not support a conclusion that MMT is a teratogen". The fact that there was a 70% maternal mortality rate in the 20 mg/kg/day dose group, which therefore limited the number of fetuses recovered for examination, does not diminish the significance of finding ocular and vertebral malformations in 39% of the recovered fetuses. Also, the significance of the "slight increase" of ocular malformations in fetuses from some rats receiving a dose of 10 mg/kg/day should not be minimized by the fact that the fetuses with the malformations were from rats which came from only one of the two shipments of animals used for the study.

Also, the Agency presently believes that the reported information, regarding the serious dose-related maternal embryo-toxicities and the possible, dose-related teratogenic

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: August 16, 1978

SUBJECT: Status Report 8EHQ-0778-0212

Approved ______________

Revision Needed ______________

FROM: Frank D. Kover
Assessment Division, OTE/OTS

TO: Joseph J. Merenda, Director
Assessment Division, OTE/OTS

Submission Description

Preliminary results of mouse skin painting studies conducted on mid-boiling (550-700°F) fractions and aromatic subfractions of petroleum crude oils. This submission is related to an earlier one (8EHQ-0178-0029) in which the same submitter reported the incidence of benign and malignant tumors in mice subjected to higher boiling petroleum fractions and aromatic subfractions. The present submission also notes that systemic toxicity was observed in mice subjected to the aromatic subfractions of the higher boiling petroleum crude oil fractions.

Submission Evaluation

It is generally accepted that most fossil fuels contain polynuclear hydrocarbons that have the requisite structure for yielding carcinogenic diol epoxides by biotransformation, especially in the liver. The preliminary report states that the findings are old hat. Nonetheless, information such of this will have more relevant meaning if the submitter actually pursues his plan to identify the chemicals present in various distillation and residue fractions (see the last sentence of the first paragraph of the preliminary report).

The issue at hand is not (as the submitter seems to feel) to what extent can carcinogenicity in experimental animals be directly translatable to carcinogenicity in man. This is a phase of assessment that still awaits solution. The important point is that the fractions contain carcinogens. It is not surprising that non-tumor related toxicity was observed with the aromatic subfractions of the higher boiling petroleum crude fractions. Shale oil has been found to contain ring compounds that differ from steriod compounds only in having five instead of four rings. Such compounds could interfere with normal steroid hormone function and affect the liver, kidneys, adrenals, pituitary, testes, ovaries and other organs. It is probable that other fossil fuels contain such steroid-like compounds.

***NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.**

Current Production and Use

Mid-boiling petroleum crude fractions and aromatic subfractions are derived from crude oil fractionation procedures. Information as to the production and uses of these specific fractions is not available; however, they are likely to represent high-volume basic petroleum feedstocks.

Comments/Recommendations

(a) The submitter should be asked to provide full copies of the final studies when completed. In the meantime, the submitter should be asked to provide a more complete description of the chemical analyses planned to determine and define any potentially carcinogenic, cocarcinogenic, and promoter substances found in petroleum crude oils.

(b) This submission and status report should be transmitted to NIOSH, OSHA, OPP, and CPSC.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: 09 AUG 1978

SUBJECT: Status Report* 8EHQ-0778-0213

Approved ______________

Revision Needed ______________

FROM: Frank D. Kover, Acting Chief
Chemical Hazard Identification Branch

TO: Joseph J. Merenda, Director
Assessment Division, OTE/OTS

Submission Description

This information was received from Shell Oil Company in a letter dated February 21, 1978. The submission consisted of the results of a battery of six mutagenicity tests conducted on butyl glycidyl ether (BGE; 1,2-epoxy-3-butoxy propane) and other glycidyl ethers. Shell submitted the information pursuant to Section 8(d) of TSCA rather than 8(e). Shell did this because, as they claim in their letter, they do "not feel that the results can be considered to be valid until further work... is done. It is Shell's position, that regardless of the above questions, this information should be made available to the Environmental Protection Agency under Section 8(d)...."

Submission Evaluation

This study concerns a battery of six mutagenicity tests conducted on a number of epoxides by Dr. Marvin S. Legator of the University of Texas Medical Branch under the sponsorship of Dow Chemical Company. In the cover letter, Shell makes reference to several problems with the experimental design of the dominant lethal test. These problems should be stated specifically by Shell.

Comments on the Microbial Test Systems and the Report Itself

Ames Test. The experimenters used only two strains of Salmonella, TA 1535 and TA 98. Ames, however, recommends that five strains be used for increased sensitivity. The additional strains which should have been used are: TA 1537, TA 1538, and TA 100. Reference is made in the results section to data from

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TA 98, however, these data have not been included in the submission; this information should be provided. In Table 2, the meaning of "Rt/Rc ± S.D (No. of Trials)" is not clearly stated. One could assume that this number refers to the control value but this is not stated. A further uncertainty concerns the generation of the standard deviation. It is not clear if this calculation was based on the raw data or a ratio. Clarification should be provided by Shell.

Body Fluid Analysis. There are a number of problems with this analysis. The experimenter used only strain TA 1538 to analyze for mutations. This strain is capable of detecting base pair mutations. However, if only one strain is to be used in the body fluid analysis, it should be strain TA 100 which is much more sensitive than TA 1538. In addition, the experimenter should also have used TA 98 which would give an indication of the presence of substances (BGE or its possible metabolites) capable of causing frame shift mutations. The investigator used cyclophosphamide as a positive control in this assay. A more suitable positive control would have been an epoxide previously shown to be mutagenic. Table 3 should contain information on the number of control revertents per plate; this data should be provided by Shell. Another problem with the study is that there was no attempt to concentration metabolites from the urine. This significantly decreases the sensitivity of this particular test.

Micronucleus Test. The experimenter used TEM (triethylene melamine) as a positive control; a more appropriate control would have been a mutagenic epoxide.

Induction of DNA Repair. In Table 14, the report does not provide the grain count of the negative control. This assay is otherwide known as the "unscheduled DNA synthesis test."

Host Mediated Assay. The report does not specify the Salmonella strains used in this assay; this information should be provided. The statement in Table 5 that the elevated mutation frequency observed in several of the assay was "due to decreased growth of microorganisms in animals" should be referenced.

Dominant Lethal Assay. The dominant lethal test is difficult to analyze. The experimenter does not define the term "Proportion Deaths/Pregnancy" used in the tables reporting the results of this assay. In the assay itself, the experimental group was given the chemical via (IP) injection. The positive control should have been applied in the same way as the experimental chemicals and in addition, a dermally active mutagenic epoxide should have been used as the positive control material in lieu of injected TEM. The "Proportion Deaths/ Pregnancy" data seem inconsistent. In three out of seven of the epoxides tested, this value is significantly lower than the control, however, in one out of the seven, it is significantly higher. This raises questions as to the adequacy of the control. It is not clear if the control was run concurrently with the experimental groups.

Failure to do this has been shown to be a factor in data variability.

Comments on Individual Chemicals

DGEBPA (diglycidyl ether of 2,2-di(p,p'-hydroxyphenyl) propane). The experimenter states that because of the results from body fluid analysis, host mediated assay, micronucleus test, and dominant lethal test, the chemical is not mutagenic in animal systems. This is not necessarily the case. The investigator did not use the most sensitive strain possible in body fluid analysis and no attempt was made to concentrate the urine. In addition, the experimenter failed to utilize the total spectrum of bacteria recommended by Ames. In the host mediated assay, the experimenter did not note the strain of bacteria used in the test, therefore, it is impossible to analyze this data.

DGENPG (diglycidyl ether of neopentyl glycol). For this compound, the statement is made that although there was some detection of mutagenic activity in the urine, the failure to detect mutagenicity in either the micronucleus or dominant lethal test "could be due to the fact that the active intermediate was not present in the animal long enough to produce activity in these tests or that the mutagenic action was so minimal that it was not detected in these tests." The use of the word minimal in the preceding sentence implies that there is very little mutagenic activity in body fluid. This is a misleading insertion, because these tests (i.e., micronucleus and dominant lethal assays) are so insensitive that in many cases they do not pick up a significant effect. In addition, the micronucleus and dominant lethal tests detect primarily chromosome-type damage. The results from these two tests do not necessarily reflect the potential danger due to gene mutations.

BGE (butyl glycidyl ether). The experimenter comments that BGE is basically mutagenic and discusses why the compound was not positive in the body fluid analysis, host mediated assay, or the micronucleus test. He suggests that the dose used in these three tests was too low to detect activity. However, in his earlier discussion of DGEBPA, the experimenter indicates that because these assays were negative, DGEBPA is, therefore, not mutagenic in animal systems. This reasoning appears inconsistent.

Because BGE is positive in the Ames test and the unscheduled DNA synthesis test, it is mutagenic. Indications of a positive in the dominant lethal test suggests that the metabolically active form of the chemical reaches the testes, and there is thus strong concern that this chemical is mutagenic. The data for BGE look significant because (a) the experimental is higher than the control and (b) there is a variation with time. However, the experimenter should submit the raw data to allow for a more adequate analysis.

CGE (o-cresyl glycidyl ether). The data for CGE suggest that this chemical may be a mutagen in mammals.

Alkyl GE (alkyl glycidyl ether). The experimenter suggests that the minimal activity observed only in the Ames test and the negative activity seen in the remainder of the assays indicates this chemical is not mutagenic. The preceding comments concerning the insensitivity of some of the testing procedures also pertain here.

DCPDGE (dicyclopentadiene glycidyl ether). Comments made with regard to alkyl GE apply here.

One aspect the experimenter has not considered is that, even if one assumes there is no danger to mammals due to mutation because the chemical is detoxified in some manner, he still has not eliminated the possibility that these epoxides may be carcinogenic in some organ before the substances are detoxified.

Shell states that the doses used in the studies are much higher than the expected worker exposure. This implies that at the present "permissible exposure level of 50 ppm" the genetic risk is nonexistent and thus they are advancing a threshold for mutagenicity. However, there is no known threshold for mutagenic effects.

Current Production and Use

Annual production figures are not available as such for BGE; however, an estimated 6-7 million pounds of alkyl, phenyl, and butyl glycidyl ethers were produced in 1973. BGE is reportedly used as a reactive diluent for epoxy resins and as a stabilizer for PVC resins, chlorinated paraffins, and other halogenated products. It may also be used in the synthesis of certain specialty surfactants.

The submission identified DGEBPA as a resin while the other compounds are used as diluents (presumably in resin systems). Producers were also identified for two of the chemicals. Dow manufactures CGE while Procter and Gamble produces mixed alkyl GE. No other information was located in the secondary sources consulted.

Comments/Recommendations

The only information in this report that Shell felt any obligation to report concerned BGE. This presumably implies that Shell does not manufacture, process, or distribute the other six chemicals. This point should be confirmed by Shell.

a) This submission and status report should be transmitted to OE, OGC, OSHA, NIOSH, and CPSC.

b) Shell should be requested to provide the information requested in the evaluation and comments sections of this status report.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: 09 AUG 1978

SUBJECT: Status Report 8EHQ-0778-0213 (supplement)

Approved ______________

Revision Needed ______________

FROM: Frank D. Kover, Acting Chief
Chemical Hazard Identification Branch

TO: Joseph J. Merenda, Director
Assessment Division, OTE/OTS

Submission Description

Shell Chemical Company in a letter to the Assistant Administrator for Toxic Substances dated February 21, 1978 provided the results of an integrated mutagenicity testing program on butyl glycidyl ether (BGE) and other glycidyl ethers. The submission was subsequently entered into the Section 8(e) public file and given the document control number 8EHQ-0778-0213. A status report presenting the Assessment Division's evaluation of this information was prepared and may be found (with the original submission) as Attachment 1. On July 17, 1978, the U.S. EPA issued a subpoena Duces Tecum (see Attachment 2) to Shell Oil Company requiring that it "Provide the following documents: (1) Report entitled "Chronic Vapor Toxicity of N-Butyl Glycidyl Ether," by Anderson, Hine, Guzman, and Wellington, dated February 18, 1957. (2) All other documents concerning substantial risk of injury to health or the environment of Butyl Glycidyl Ether." A letter containing the 1957 study identified in (1) above as well as some additional mutagenicity data was mailed by Shell on July 12, 1978 and received by the Assistant Administrator for Toxic Substances on July 18, 1978 (see Attachment 3). In response to the administrative subpoena, Shell, in a letter dated July 26, 1978, provided seven additional pieces of information (see Attachment 4). The Shell submissions dated July 12 and July 26 were collectively assigned the document control number 8EQ-0778-0213 (supplement). These two items are the subject of the present status report.

Submission Evaluation

The discussion in this section will initially concern itself with the information submitted by Shell in their letter of July 12,

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1978 (Attachment 3). The 1957 study is an adequate preliminary investigation which suggests that butyl glycidyl ether can produce pathologic change (e.g., liver). The fact that the compound causes significant failure to gain body weight at 150 ppm makes it dubious that the 50 ppm workplace standard is appropriate. The conclusion reached in this study that humans could tolerate exposure to 50 ppm without harm is not justified by the shallowness of the investigation. This study is sufficient only as a preliminary investigation and it will likely have to be redone.

The immediate situation presented by this submission is that:

a) By the Ames Test, BGE is mutagenic

b) BGE causes failure in normal increases in body weight.

c) BGE is capable of producing liver injury.

d) BGE may be a sufficient pulmonary irritant to be of concern in the etiology of increased lung infections (pneumonia).

e) It remains to be established whether the testicular effect is due to direct action on the testes or if the atrophy is secondary to some other process affecting the pituitary, adrenals, and thymus. In the absence of evidence that the testicular atrophy is in reality secondary to an adrenal-pituitary-thymus effect, it should be assumed that the testicular effect is the result the direct action by BGE. The assumption offered by the authors that the testicular atrophy was probably not a primary event but was the result of some other secondary abnormality, especially pneumonia, is a mere guess without supportive data.

f) The term "stress effect on the kidneys" (p.5 of the 1957 study) is not adequately defined and probably represents an impression of the examiner. It is surprising that no kidney tubule changes were observed and reported. Such changes are characteristic of many glycols and similar compounds. An earlier publication (Hine et al., A.M.A. Arch. Ind. Hlth., 14, 250, 1956) reported that alpha-monochlorohydrin (1-chloro-2,3-propandiol) (suggested as a possible metabolite of glycidol) produced kidney changes including tubule necrosis.

The major weakness in this preliminary study is the extensive use of circumstantial reasoning to explain an observation (i.e., this effect occured only under certain circumstances, therefore, it must be due to this cause). Such reasoning is neither final nor definitive; in all such cases, the test material must be given adequate additional testing to determine the actual causes of an observed effect.

This submission indicates that BGE has the potential to cause testicular atrophy as well as other adverse effects in rats. Of note is the surprising finding that "on repeated vapor exposure n-butyl glicidyl ether is at least as toxic as allyl glycidyl ether, which was the most toxic of the glycidyl ethers previously thus tested." The author of the study attributes this finding to "experimental variation"; nonetheless, this point should have been examined further.

The report states that seven cases of testicular atrophy were observed; close reading of the study reveals only six instances (1/10 at 75 ppm; 5/10 at 300 ppm). This question should be resolved. In addition, it is not clear from the report if the testicular atrophy was identified following gross or histopathology. The structure of the report appears to indicate the latter, although this is not clear. It would also be useful to obtain any available findings on the 4 rats in the 300 ppm group that died early in the experiment and were not subsequently discussed.

The observation that BGE produces testicular atrophy in rats, while never before demonstrated, is, nevertheless, not an isolated finding for the class of glycidyl ethers. Testicular degeneration has been noted in several animal species after exposure to allyl glycidyl ether (rats: intramuscular injection), diglycidyl ether (rats: dermal, inhalation; rabbits; inhalation; dogs: intravenous injection), phenyl glucidyl ether (rats: inhalation), and triethylene glycol diglycidyl ether (mice: intraperitoneal).

The information transmitted by Shell in their letter of July 26, 1978 (see Attachment 4) consists of seven pieces of information. In the cover letter, Shell notes that it (in conjunction with Ciba-Geigy and Celanese) is sponsoring a mutagenicity study intended to follow-up the results of the dominant lethal assay of BGE which were forwarded to EPA in February (Attachment 1). This study is also intended to investigate certain aspects of the 1957 study which showed the testicular changes in rats following chronic inhalation of BGE. Unfortunately, the planned work involves dermal exposure to BGE and is being conducted in mice instead of rats; therefore the new work will leave unresolved many questions concerning the 1957 study.

Data element number 3 of the July 26 letter, the University of California report dated March 13, 1956, was subsequently published in the A.M.A. Archives of Industrial Health (14, 250, 1956). The 1957 BGE study received with the Shell letter dated July 12 (Attachment 3) was originally intended as a portion of this 1956 publication; however, for reasons not althogether clear, the 1957 results were never published. The 1956 study is somewhat optimistic about the toxicity of BGE when taken by mouth or when inhaled. The data indicate that perhaps BGE will not produce an immediate dramatic effect including fatality. Nevertheless, the data tell nothing about the other and long range effects of a single dose or the effects of chronic exposure to small amounts. The acutely lethal dose of BGE is in the ranges of aspirin lethality.

Data elements 4 through 7 of the July 26 letter report on skin irritation aspects of BGE. This information suggests the need for human skin testing to determine the potential for adverse reactions in consumers or workers exposed to the material. This is borne out in a letter (data element 4) by Dr. N. G. White of Shell Chemical Corporation. This letter cites a reference to a published article in A.M.A. Archives of Dermatology in which the author reports the irritating aand sensitizing action of BGE.

Current Production and Use

Annual production figures are not available as such for BGE; however, an estimated 6-7 million pounds of allyl, phenyl, and butyl glycidyl ethers were produced in 1973. BGE is reportedly used as a reactive diluent for epoxy resins and as a stabilizer for PVC resins, chlorinated paraffins, and other halogenated products. It may also be used in the synthesis of certain specialty surfactants.

Overall Evaluation

The Agency has received information on BGE from Shell Oil Company that indicates the following:

a) BGE is suspected of inducing testicular atrophy in rats exposed via inhalation.

b) BGE gave positive results in the Ames test and the unscheduled DNA synthesis test; therefore, BGE appears mutagenic.

c) BGE is positive in the mouse dominant lethal assay by skin absorption. The data appear significant (despite Shell's professed lack of confidence in the results) because the experimental is higher than the control and there is some variation with time. Indications of a positive in the dominant lethal test, expecially when combined with the finding of testicular degeneration in rats, suggest strongly that an active form of the chemical reaches the testes. These findings elicit heightened concern in light of the demonstrated mutagenicity of BGE which may indicate that germ cells are at increased risk of gene mutation.

Additional information available to the Agency, and presumably also to Shell, indicates that:

a) Annual production of BGE is in excess of approximately 1 million pounds; an exact figure is not available.

b) The observation that BGE produces testicular degeneration in rats is not an isolated finding for the class of glycidyl ethers. Testicular degeneration has been shown in several animal species following exposure to four other glycidyl ethers that are similar or related to BGE.

Part V(a)(2) of the March 16, 1978 "Statement of Interpretation and Enforcement Policy" states that the Agency considers Section 8(e) - reportable substantial risk information to include "Any pattern of effects or evidence which reasonably sypports the conclusion that the chemical substance or mixture can produce cancer mutation, birth defects or toxic effects resulting in death, or serious or prolonged incapacitation" (43 FR 11112). Furthermore, the introduction to Part V states that "The human health effects listed in Subpart (a)... are so serious that relatively little weight is given to exposure..." (43 FR 11111) as a factor in Section 8(e) reporting requirements. It is concluded that the pattern of evidence provided by the data contained in Shell's February 21, July 17, and July 26, 1978 submissions, together with the additional information mentioned above, reasonably supports the conclusion that exposure to BGE poses a substantial risk of injury to human health as defined in the March 16, 1978 Policy Statement.

Comments/Recommendations

In addition to the uncertainties remaining with respect to the 1957 study, further information should be developed to determine the extent of and potential for exposure to BGE.

a) The submitter should be requested to provide available information on exposure to BGE production workers, industrial and non-industrial users of BGE, and users of products employing BGE. Such information is needed to better assess the need for and proper focal point of any further follow-up actions.

b) It is recommended that NIOSH and OSHA initiate medical surveillance of exposed workers in industries using glycidyl ethers (expecially BGE, allyl glycidyl ether, phenyl glycidyl ether, and other similar compounds with demonstrable annual production).

c) This submission and status report should be transmitted to CPSC in addition to NIOSH and OSHA.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: JAN 31 1979

SUBJECT: Status Report*8EHQ-0978-0213 (Subpoena Responses)

Approved ________

Revision Needed ________

FROM: Frank D. Kover
Assessment Division, OTE/OTS

TO: Joseph J. Merenda, Director
Assessment Division, OTE/OTS

Submission Description

On September 1, 1978, subpoenas pursuant to section 11(c) of TSCA were issued to the following firms: Celanese Corp.; Ciba-Geigy Corp.; Reichhold Chemicals, Inc.; Shell Oil Company; Dow Chemical Company; and Hine, Inc. The parties named in the subpoenas were requested to produce documents relating to n-butyl glycidyl ether (BGE). The discussion below offers technical comments keyed to specific sections of each company's subpoena response.

Submission Evaluation

Shell Oil Company

(4a) Paragraph 3 of this intra-Shell note (dated April 4, 1978) presents an invalid argument. A negative dominant lethal test is open to question; a positive result is considered to be definitive (unless the test is mechanistically deficient).

(4c) Journal article dated January, 1961; p. 57/51 (column 2, paragraph 3) - The use of rats assigned to another study in lieu of preinjection controls could be questioned based on the standard error associated with such a procedure.

p. 58/52 - If the thymus, spleen, and testes were most frequently altered histologically, what did the adrenal cortex show? Thymic involution is usually due to discharge of glucocorticoids from the adrenal cortex.

p. 59/53 - Table 3 does not include BGE. Is it to be assumed that the rats receiving this compound did not show changes in those organs listed in the table? In column 2, the rise

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in leucocyte counts should be accounted for. An unexpected rise instead of the expected fall in the count does not mean that the compound lacks a hematopoietic effect.

(4d) Journal article dated February, 1958. This publication does not mention BGE.

(4e) Recognition by R. E. Joyner, M.D., Shell's Medical Director, that BGE is a potential carcinogen (December 27, 1977).

(4f) Intra-Shell note dated March 3, 1978. Offers recognition that the dominant lethal study by Legator may be valid.

(4k) Memorandum (dated April 20, 1977) by Dr. Joyner, Shell's Medical Director, clarifying Dr. Hine's role in the toxicity studies with BGE. Table 5 shows BGE to be positive in the Ames test. No data for the other tests are available in the table.

(4q) Note to file by a Shell toxicologist; dated December 2, 1977. Under the conditions of the 1977 Legator study, BGE was the most strongly mutagenic of the compounds tested in the Ames and dominant lethal assays.

(4aa) Hine's report on the effects of epoxy compounds on the hematopoietic system of rats, dated October 3, 1958. BGE was not found to be radiomimetic in contrast to many other tested glycidyl ethers; however, BGE was not extensively tested.

(4bb) Letter dated September 4, 1956 and signed by Hine on Shell stationery in which he states that he considers BGE to have "slight" toxicity even though it is much more toxic than EPON 828, a Shell trade-named product.

(4ee) Memo from Hine on Shell stationery dated July 15, 1957. In Table 3, BGE is reported to have caused a 27.3% increase in white blood cell counts and no change in femoral marrow nucleated cell counts. Hine discounts the increase and, therefore, no further examination (such as differential counts) was conducted. The study is incomplete; white blood cell formation, particularly in rats, is not limited to bone marrow.

Dow Chemical U.S.A.

Letter from Tyson of Dow to Hilson of EPA dated September 20, 1978. The enclosure to the letter claims that BGE is rapidly metabolized in the body and therefore poses limited risk to the organism. This is not necessarily the case. The only time that the metabolism of BGE might be rapid enough to convert the compound to an inactive metabolite would be following oral ingestion. In this case, the compound would have to first pass through the liver before reaching other body cells. Absorption through the skin and upper respiratory membranes would avoid potential liver detoxification and all organs would be exposed to unmetabolized BGE.

Attachment 10 - Letter from Industrial Bio-Test to Dow dated July 16, 1957. Industrial Bio-Test found in human studies that BGE is a primary skin irritant and probably an allergen. Skin depigmentation was frequently observed at the site of application. The lab's Technical Director suspected that BGE contained monobenzohydroquinone ether which is known to cause leukoderma (skin depigmentation). Such depigmentation is the result of disturbances in melanin metabolism. Note that Industrial Bio-Test had to discontinue further testing of the material in humans.

Attachment 29 - The first draft (December, 1977) of the NIOSH Criteria Document on glycidyl ethers contains several references (see pages 75-77) to observed testicular necrosis or atrophy in lab animals (rats, rabbits, and dogs) exposed to diglycidyl ether. Thus, anyone who reviewed this draft Criteria Document would have available information reporting that diglycidyl ether can cause testicular changes; this may also indicate that the Hine-reported testicular effects of BGE in rats are real, although diglycidyl is generally viewed as one of the more biologically active members of the glycidyl ethers.

Attachment 44 - Telex dated November 30, 1977. A Dow employee expects positive mutagenicity data on BGE to lead to its removal from the commercial market.

Attachments 66 and 68 - In these two items dated November, 1977 and January, 1978, respectively, Dow expresses concern over BGE exposures.

Attachment 72 - Dow claims in its answers to the subpoena questions that it does not manufacture, process, or distribute BGE. However, attachment 72, dated October 24, 1975, says that a Dow product contains BGE. What is the story here?

Reichhold Chemicals, Inc.

Exhibit II (record of meeting held February 10, 1978) - Point Number 8. The fact that BGE fails to show evidence of mutagenic effects when tested in activated liver cultures cannot be extrapolated to mean that humans will rapidly metabolize BGE and thereby minimize cellular contact with the chemical. There is apparently no scientific basis for this extrapolation considering that Dow informed NIOSH it was not familiar with any data relating to the pharmacokinetics and biotransformation of BGE. The response of BGE in the nonactivated cultures is of some concern because all respondents acknowledge that dermal exposure to BGE is of the greatest concern occupationally. Exposure via this route means that BGE will not be deactivated in a first pass through the liver but will contact many body tissues as the active form.

Exhibit II - Point Number 22. This item recognizes a possible relationship between BGE exposure and the testicular atrophy observed in the 1957 Hine study.

Exhibit X - W. R. Bowditch's comment (dated February 13, 1978) that all companies will withdraw BGE from the market if the chemical is found to be a mutagen is of interest.

Exhibit XVII - Technical bulletin dated September, 1978. On page 3, the LD_{50} of BGE is reported in the range of aspirin. Does this indicate low toxicity? To put this into perspective, aspirin is a popular suicide drug in England.

Celanese Corporation

In this response, much is made of the finding that the mutagenicity response of BGE decreases in the Ames test with metabolic activation. This could have real significance if BGE is swallowed. However, other routes of exposure, such as skin and lungs, permit the unmetabolized compound to come into contact with all tissues. These routes of exposure bypass the liver while a substance that is swallowed has to pass through the liver before reaching other tissues. In addition, a substance that bypasses the liver is highly diluted by the time it reaches the liver and less of the total "dose" is metabolized. A classical example of this point concerns nitroglycerin tablets used to alleviate attacks of angina pectoris. If the tablet is placed under the tongue, the nitroglycerin avoids the first bypass and relieves the heart pain in a dose of 0.005 mg; however, if the tablet is swallowed, the effective dose becomes 0.2-0.4 mg, a 40-80 fold increase.

The objection by the industry toxicologist is further weakened by the use of deliberately elevated enzyme activity in liver homogenates from rats administered either phenobarbital or PCB. The average person would not have such enzyme induction and would, therefore, detoxify BGE at a slower rate giving rise to greater tissue contact with BGE over a period of time.

Response to question No. 4 posed in Section IV of the subpoena ("What is the rationale for repeating the dominant lethal assay portion of the 1977 (Legator) study?"). In its answer to this question, Celanese points out the following problems with the experimental design employed in the 1977 study: (1) only one dose level was used and (2) the control group was not run concurrently with the test groups. The latter represents unacceptable scientific procedure and seriously detracts from the significance of this study. (Ciba-Geigy also made these points in its response to this question.)

Ciba-Geigy Corporation

Appendix 1, Attachment 3.2 - Handwritten minutes of meeting held March 17, 1978. This item rules out epichlorohydrin as a significant contaminant of BGE that could account for the positive findings in the mutagenicity tests.

Comments/Recommendations

Two significant points can be derived from evaluation of the subpoena response. Firstly, the initial draft of the NIOSH Criteria Document on glycidyl ethers (dated December, 1977) contains several references to observed testicular necrosis or atrophy in lab animals exposed to diglycidyl ether. Later drafts of the Criteria Document, however, report that several other glycidyl ethers have also been shown to induce this effect. This might indicate that the identification of other studies corroborating the evidence offered in the 1957 investigation may not have been as straight-forward as the Assessment Division assumed previously. Secondly, two serious flaws are apparent in the experimental design of the Legator dominant lethal assay: (1) only one dose level was used and (2) the controls were not run concurrently with the experimentals. The latter flaw represents unacceptable scientific procedure and seriously detracts from the significance of this study.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: APR 4 1979

SUBJECT: Status Report* 8EHQ-0279-0213 (Updated Status Report/Summary and Conclusions)

Approved JM 4/4/7

Revision Needed

FROM: Frank D. Kover
Assessment Division, OTE/OTS

TO: Joseph J. Merenda, Director
Assessment Division, OTE/OTS

Submission Description

This status report summarizes the information received to date on butyl glycidyl ether (BGE) and presents the final technical conclusions resulting from the Assessment Divisions's evaluation of the available data. During the course of this evaluation, both confidential and nonconfidential data were examined, however, only nonconfidential information is discussed in this status report. The exclusion of confidential information from this discussion, however, does not affect the conclusions reached.

Submission Evaluation (Summary)

The first BGE study, submitted by Shell Oil Company on February 21, 1978, reported the results of a batter of mutagenicity tests conducted by Dr. Marvin Legator of the University of Texas Medical Branch, Galveston, Texas, under the sponsorship of Dow Chemical Company. Evaluation of the initial submission (refer to Attachment I for a full copy of the Status Report) showed that:

(a) BGE was positive in the Ames Test and the unscheduled DNA synthesis test; therefore, it should be considered mutagenic. The current state of the art in mutagenicity testing suggests that a consensus is lacking on the value of some mutagenicity test systems for indicating mutagenic potential in humans. Nevertheless, good qualitative correlations presently exist between positive results from various mutagenicity test systems and positive animal oncogenicity test results when the same chemical is tested. Quantitative extrapolations from these mutagenicity test systems are, however, presently not valid.

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*NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

(b) Indications of a positive in the mouse dominant lethal assay suggest that an active form of the chemical reaches the testes; accordingly, there is strong concern that BGE is mutagenic. The experimental data look significant because the experimental values are higher than the controls and there is a variation with time.

The second BGE submission, consisting of a 1957 study entitled "Chronic Vapor Toxicity of n-Butyl Glycidyl Ether" by Anderson, Hine, Guzman, and Wellington (dated February 18, 1957), was voluntarily provided to the Agency by Shell in a letter dated July 12, 1978. On July 17, 1978, the U.S. EPA issued a subpoena to Shell requiring that it provide a copy of this 1957 study and any other substantial risk information in its possession on BGE. In its response (July 26, 1978) to the subpoena, Shell provided the 1957 study plus several additional pieces of information. Evaluation of these materials (refer to Attachment II for a full copy of the status report) showed that:

(c) The 1957 study is an adequate preliminary investigation which suggests that BGE can produce pathologic change (e.g., liver damage). It remains to be established whether the testicular effect observed in this study is due to direct action on the testes or if the atrophy is secondary to some other process affecting the pituitary, adrenals, and thymus. In the absence of evidence that the testicular atrophy is in reality secondary to an adrenal-pituitary-thymus effect, it should be assumed that the testicular effect is the result of direct action by BGE (the dominant lethal study supports this interpretation). The assumption offered by the authors that the testicular atrophy was probably not a primary event but was the result of some other secondary abnormality, especially pneumonia, is a mere guess without supportive data. The observation that BGE produces testicular atrophy in rats, while never before demonstrated for this chemical, is, nevertheless, not an isolated finding for the class of glycidyl ethers. Testicular degeneration has been observed in several animal species after exposure to four other members of this chemical class.

(d) No other information of significance was developed in this series of submissions.

The final set of BGE submissions consists of the responses from five chemical companies to a series of subpoenas issued by the U.S. EPA on August 31, 1978. Evaluation of these responses (refer to Attachment III for a full copy of this status report) indicates that:

(e) One of the factors used by the Assessment Division to bolster its conclusion that the 1957 study offered reasonable support for the conclusion of substantial risk was evidence that several glycidyl ethers other than BGE had been shown to cause testicular atrophy in test animals. An important point to be considered, however, is precisely what information corroborating the reported testicular effects of BGE would be uncovered during the course of a reasonable literature search. The first draft of the NIOSH Criteria Document on glycidyl ethers (dated December, 1977) contains several references to observed testicular necrosis or atrophy in lab animals exposed to diglycidyl ether. Later drafts of the Criteria Document, however, report that several other glycidyl ethers have also been shown to induce this effect. Thus, it should be noted that the initial NIOSH investigation of the literature on glycidyl ethers did not uncover several of the articles indicating that other compounds in this chemical class have been shown to cause testicular atrophy. This might indicate that the identification of other studies corroborating the evidence offered in the 1957 investigation may not have been as straightforward as the Assessment Division assumed previously.

(f) Two serious flaws in the experimental design of the Legator dominant lethal assay are apparent: (1) only one dose level was used and (2) the controls were not run concurrently with the experimentals. The latter flaw represents unacceptable scientific procedure and seriously detracts from the significance of this study.

Overall Conclusions

The Assessment Division initially concluded that the results of the Legator study when combined with the 1957 study offered reasonable support for a conclusion of substantial risk on the basis that: (1) BGE is mutagenic; (2) the dominant lethal study demonstrates that an active form of the chemical reaches the testes; (3) in the absence of data to the contrary, it should be assumed that the testicular atrophy observed in the 1957 study is the result of direct action by BGE; and (4) the finding of testicular degeneration following exposure to BGE is not an isolated finding for the class of glycidyl ethers, as four other members of the chemical class are known to cause this condition. Further, the Assessment Division assumed that the information represented by point (4) was reasonably available to Shell and the other chemical companies.

Following technical evaluation of all the information available to the several chemical companies (as represented by the subpoena responses), however, it appears that one or more of the four supporting points outlined above may not be valid. Specifically, the Legator dominant lethal assay has largely been thrown open to question in light of serious concerns about the validity of the controls (point (2) above). In addition, the corroborative data used by the Assessment Division to support the findings of testicular atrophy in the 1957 study may not have been as widely available to the several companies as was suspected previously (point (4) above). By a process of elimination, therefore, points (1) and (3) above remain intact.

Part VI of the March 16, 1978 policy statement (43 FR 11110) states that when considering in vitro experiments and tests "(consideration) may be given to the existence of corroborative information, if necessary to reasonably support the conclusion that a chemical presents a substantial risk." BGE was found positive in two of the six mutagenicity assays conducted (positive: Ames and unscheduled DNA synthesis; negative: body fluid analysis, host mediated, and micronucleus; uncertain: dominant lethal assay). In general, mixed results from a battery of mutagenicity tests often indicate the need to consider corroborative data before reaching a conclusion of substantial risk. (Nevertheless, situations can arise where a single positive or even mixed results can, when combined with the exposure picture, be sufficient to trigger reporting [an example would be tris].) For the most part, "corroborative data" take the form of additional effects data and/or exposure data. The National Occupational Hazard Survey conducted by NIOSH estimated that 13,000 workers are potentially exposed to BGE, however, actual worker exposure is apparently controlled because of BGE's irritating properties (for more information see the NIOSH Criteria Document on glycidyl ethers). As far as other effects data are concerned, without the support of the dominant lethal assay and the structure/activity correlation associating testicular atrophy with glycidyl ethers, the 1957 study remains "an adequate preliminary investigation" and does not itself strongly support the conclusion that BGE can cause serious or prolonged damage to male reproductive organs. Thus, in conclusion, the information available to Shell and the other companies during the first months of 1978 did not clearly offer reasonable support for the conclusion that BGE presents a substantial risk of injury to health or the environment, although it does strongly suggest a need for further investigation of BGE's genetic and male reproductive effects.

Comments/Recommendations

The final draft of the NIOSH Criteria Document on glycidyl ethers (released in June, 1978) contains several references to observations of testicular effects in laboratory animals exposed to 4 different glycidyl ethers (allyl glycidyl ether, diglycidyl ether, phenyl glycidyl ether, and triethylene glycol diglycidyl ether). When these studies are considered in conjunction with exposure information, reasonable support for the conclusion of substantial risk is clearly evident for BGE. The basis for this conclusion is that the significance of the 1957 study is greatly enhanced when one considers the finding that four other members of the structural class of glycidyl ethers have also been shown to cause testicular atrophy in laboratory animals. BGE's apparent mutagenicty, while not essential to this determination of "reasonable support," nevertheless, does provide additional support for the conclusion that BGE presents a substantial risk of injury.

An illustration of the significance of the 1957 study can be found in the NIOSH decision to issue a Current Intelligence Bulletin on glycidyl ethers (October 12, 1978) only 4 months after release of the Criteria Document. The only new information cited in the Current Intelligence Bulletin is the 1957 study. The expressed purpose of this NIOSH publication is to "promptly review, evaluate, and supplement new information received by NIOSH on occupational hazards that are either unrecognized or are greater than generally known."

a) The submissions and status reports on BGE should, be transmitted to NIOSH and OSHA. Confidential portions will have to be considered independently for transmittal on a "need to know" basis.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: JAN [illegible]

SUBJECT: Status Report* 8EHQ-0778-0214

Approved JM 3/23/79

Revision Needed

FROM: Frank D. Kover
Assessment Division, OTE/OTS

TO: Joseph J. Merenda, Director
Assessment Division, OTE/OTS

Submission Description

Information reporting that Kenplast G, a proprietary mixed aromatic hydrocarbon plasticizer, was positive in a single strain Ames test in the presence of S-9 (microsomes).

Submission Evaluation

In all cases, the Agency prefers to see the raw data from submitted studies. The summary provided indicates that the chemical is a weak mutagen. The data appear a little erratic; this may be because the mixture forms an emulsion under the test conditions. A suspension test might give cleaner results.

Part VI of the March 16, 1978 policy statement (43 FR 11110) states that, with respect to in vitro experiments and tests, "(consideration) may be given to the existence of corroborative information, if necessary to reasonably support..." a conclusion of substantial risk. Insofar as the present submission concerns only the results of a single Ames test in a single bacterial tester strain, what corroborative data were considered in reaching the conclusion of substantial risk? The cover letter cites submission 8EHQ-0877-0002 concerning Mobisol 44 as providing corroborative data. Mobisol 44, a "flexibilizer (plasticizer) diluent," was found to be moderately tumorigenic in a mouse skin painting test. The composition of Mobisol 44, like that of Kenplast G, was never specified. Nevertheless, the present submitter is presumably maintaining that the two materials are somewhat similar in composition and that, therefore, the Mobisol 44 skin painting results tend to indicate that the Ames test data present a valid (though quite preliminary) index of the tumorigenic potential of Kenplast G.

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A single strain Ames test has uncertain value for indicating mutagenic potential in humans. A battery of Ames tests, using several tester strains, both with and without activation, is considered to provide a stronger indication of the possible mutagenicity of a chemical than will a single strain test.

Current Production and Use

No information is available in the secondary literature on this material. As noted above, the submitter reports that Kenplast G is used as a plasticizer.

Comments/Recommendations

Kenplast G is reportedly similar in composition to Mobisol 44, the subject of submission 8EHQ-0877-0002.

a) The submitter should be asked to provide a full copy of the Ames test final report. The results of any other available mutagenicity or chronic toxicity testing should also be provided.

b) The submitter should describe any further testing of Kenplast G that is planned.

c) The cover letter notes that information describing the toxicology of Mobisol 44 is enclosed with the original submission; this information was not included in the submission and should be provided.

d) The analytical composition of Kenplast G should be provided, if available; in particular a description of the presence of polynuclear aromatic hydrocarbons and/or metals in the commercial product.

e) Mixed aromatic hydrocarbon plasticizers should be considered a candidate for CHIP or chemical technology review. This submission should also enter the Assessment Division carcinogens/mutagens/teratogens (CMT) screening process.

f) This submission should be referred to NIOSH, OSHA, CPSC, LTAT (AD), CAD, and OSW.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: August 16, 1978

SUBJECT: Status Report 8EHQ-0778-0215

FROM: Frank D. Kover
Assessment Division, OTE/OTS

TO: Joseph J. Merenda, Director
Assessment Division, OTE/OTS

Approved ___________

Revision
Needed ___________

Submission Description

Results of a lifetime skin-painting study of a heating oil (No. 2 burner fuel) in mice.

Submission Evaluation

There is a definite incidence of malignant neoplasms of the skin following lifetime application to mice. Based on the 40 mice, the incidence of malignant neoplasms is about 8%. The significance of this could be arrived at only by studying a much larger group of mice. Nonetheless, the finding must be tentatively accepted as real since the experiment was conducted by a "well-known independent university research laboratory."

A recurrent problem with submissions such as this one is that they generally contain very little physicochemical data on the composition of the petroleum material. In this case, the unknown is the amount of polynuclear hydrocarbons present in the crude and catalytically cracked fractions. If the polynuclear content is low, then it is conceivable that there will be batch variability in the carcinogenicity observed with these materials. The incidence of carcinogenicity could be as low as one in every twenty batches or so.

Current Production and Use

The submitter reports that the test material is used as a heating oil, presumably for space heating.

Comments/Recommendations

(a) Request submitter to provide a full copy of the final report, including the results of any analytical work conducted on these samples.

(b) Transmit submission and status report to NIOSH, OSHA, and CPSC.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: FEB 1979

SUBJECT: Status Report* 8EHQ-0778-0216

Approved 3/12/79

Revision Needed

FROM: Frank D. Kover
Assessment Division, OTE/OTS

TO: Joseph J. Merenda, Director
Assessment Division, OTE/OTS

Submission Description

Results of a battery of mutagenicity tests conducted on two powdered oil shale ore samples ("RS-101" and "RS" (raw shale)) and a sample of retorted (or heat-treated) shale.

Submission Description

RS-101 was found:

a) weakly mutagenic in the Ames suspension test with metabolic activation.

b) mutagenic in the in vitro mammalian cell culture assay both with (5X background) and without activation (3X background). A positive dose response was found under both conditions.

c) to yield equivocal results in the in vivo rat bone marrow cytogeneticity assay. The substance may induce chromosome aberrations as evidenced by an increased aberration frequency at one time point in the high acute dose group.

RS-101 is a gene mutagen and may have the potential to cause chromosome aberrations; further testing is needed.

RS (Raw Shale) was found:

a) negative in the microbial assays.

b) equivocal in the in vitro mammalian cell culture assay. Although there was no clear dose response, the treated values are consistently higher than the solvent controls (3X background for nonactivated and 2.5X for activated assays). The test should be repeated to validate the results.

c) clastogenic (breaks chromosomes) in the in vivo rat bone marrow cytogenicity assay.

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RS can cause chromosome aberrations and may have the potential to cause gene mutations; further testing is needed.

Retorted shale was found:
- a) negative in the microbial assays.
- b) weakly positive in an in vitro mammalian cell culture assay (2.5X the solvent control in the high dose nonactivated assay). The results are equivocal and the study should be repeated.
- c) negative in the in vivo rat bone marrow cytogenicity study.

Retorted shale is not clastogenic; it should be retested to further define its potential to cause gene mutations.

Current Production and Use

Oil shale ores can be retorted (destructively distilled) above ground by two different processes: Paraho direct pyrolysis of oil shale and the indirect Paraho process. In both cases the product obtained is a synthetic crude oil which is suitable for further processing using standard petroleum refining technology. No shale oil recovery plants are currently in commercial operation in the U.S.

Comments/Recommendations

Other submissions have concerned shale oil and have shown this oil shale ore extraction product to be mutagenic in various test systems (8EHQ-0178-0030) and carcinogenic in an animal skin painting study (8EHQ-0278-0083). The present submission indicates that oil shale solids may be mutagenic, however, additional testing is needed to validate the results presented. Any testing conducted on the gaseous products of the retorting process would be of much interest to the Agency.

a) The submitter should be asked to describe any planned future testing of shale oil or oil shale products.

b) Available data describing the analytical composition of the oil shale solids should be requested from the submitter.

c) This submission and status report should be transmitted to NIOSH, OSHA, DOE, OSW, and ORD.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: August 16, 1978

Approved __________

SUBJECT: Status Report 8EHQ-0778-0217

Revision
Needed __________

FROM: Frank D. Kover
Assessment Division, OTE/OTS

TO: Joseph J. Merenda, Director
Assessment Division, OTE/OTS

Submission Description

The results of eye irritation tests in albino rabbits on three substances produced in the Solvent Refined Coal (SRC) process at the SRC Pilot Plant in Dupont, Washington. The three substances are SRC naphtha, SRC mineral residue, and SRC wash solvent.

Submission Evaluation

OSHA should determine (1) if the eye wash procedures described in the cover letter are adequate to protect workers and (2) if the analgesic solution should be used without the supervision of an ophthalmologist. Improper use of this solution, while relieving pain, may lead to more serious complications.

The submission is admittedly incomplete; a full copy should be supplied upon completion of the work. Of crucial concern will be the investigator's observations of the effects seen in the rabbits' eyes. The crucial point here is to what degree do these "extremely" or "seriously" irritating compounds cause corneal damage producing errors of refraction, particularly astigmatism.

Current Production and Use

The SRC Pilot Plant is capable of being operated in two modes, namely SRC-1 with a solid product and SRC-2 with essentially liquid and gaseous products. In each of the production modes, detailed analyses are available as to the composition (chemical analysis) of each of the flow streams within the plant. Therefore, the chemical composition of the three SRC products should be available to the submitter.

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The SRC process is being evaluated in the pilot plant to determine if it is a commercially feasible method for the removal of undesired coal contaminants prior to the use of coal as a fuel.

Comments/Recommendations

(a) The submitter must provide a complete copy of the final study when available; this should include complete chemical analysis on all three SRC products.

(b) The submitter reports that there have been several incidents at the pilot plant of personnel getting SRC materials in their eyes. The submitter should be alert to the potential for subtle eye problems (e.g., astigmatism) in addition to more severe cases of permanent eye damage. If the attending ophthalmologist has any indication that these subtle effects have in fact been observed, this information should be transmitted to EPA.

(c) This submission and status report should be transmitted to NIOSH, OSHA, and U.S. DOE.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: August 28, 1978

SUBJECT: Status Report 8EHQ-0778-0218

Approved ______________

Revision Needed ______________

FROM: Frank D. Kover
Assessment Division, OTE/OTS

TO: Joseph J. Merenda, Director
Assessment Division, OTE/OTS

Submission Description

Results of a 1-year chronic oral toxicity study with Phosvel (leptophos) in adult chickens.

Submission Evaluation

The data presented definitely establish that 100 ppm of leptophos is neurotoxic in chickens. This submission does not contain histopathological data as these will be provided at a later date when examination of the slides is completed. Such an examination may reveal effects on nerve sheaths at concentrations below those which produce clinical manifestations.

Current Production and Use

It is not clear if Phosvel is still in production in the United States; the Washington Post edition of December 10, 1976, reports that the submitter stopped producing the pesticide earlier in that year. This point should be clarified through follow-up to the submitter. Phosvel was apparently never approved for use as a pesticide in the United States; however, it was approved for export. Following its use in Egypt, rural villages reported severe health effects, including paralysis and death of water buffalo as well as various human neurological problems. Phosvel was produced at one of the submitter's plants apparently until nervous disorders were recognized in exposed workers in December 1976.

Comments/Recommendations

Insofar as Phosvel is not a registered pesticide, this information was submitted pursuant to TSCA Section 8(e) rather than FIFRA Section 6(a)(2).

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(a) The submitter should be asked to provide confirmation for the claim that they are no longer manufacturing, processing, or distributing Phosvel in commerce.

(b) This submission and status report should be transmitted to OSHA, NIOSH, and OPP.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: August 21, 1978

SUBJECT: Status Report 8EHQ-0778-0219

Approved ______________

Revision Needed ______________

FROM: Frank D. Kover
Assessment Division, OTE/OTS

TO: Joseph J. Merenda, Director
Assessment Division, OTE/OTS

Submission Description

Report of an industrial hygiene survey conducted to monitor employee exposure to DBCP, ethylene dichloride, and cyclohexane.

Submission Evaluation

Very little information of note was contained in this submission. For the most part, employee exposures to ethylene dichloride, cyclohexane, and DBCP were within current OSHA exposure limits, although the DBCP values were above the proposed OSHA standard of 1 ppb. Previous analyses had indicated that a TMCB (?) residue contained a substantial quantity (4-11%) of DBCP; however, samples of the distillation fractions of crude TMCB contained no detectable DBCP (level of detection - 2.4 ppm).

Comments/Recommendations

(a) The submitter should be asked to provide documentation that the findings reported in this submission reasonably support a conclusion of substantial risk of injury to health or the environment.

(b) The chemical identity of TMCB must be supplied by the submitter.

(c) This submission should be transmitted to NIOSH and OSHA for appropriate action.

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: August 21, 1978

SUBJECT: Status Report 8EHQ-0778-0220

Approved ________

Revision Needed ________

FROM: Frank D. Kover
Assessment Division, OTE/OTS

TO: Joseph J. Merenda, Director
Assessment Division, OTE/OTS

Submission Description

Results of acute toxicity testing in rabbits and rats of neutral oils from bromodichlorobenzene hydrolysis. The oils are identified as consisting of unreacted bromodichlorobenzene (BDCB), 2,5-dichloroanisole (DCA), p-dichlorobenzene (DCB), p-chloroanisole (CA), and chlorobromoanisole (CBA). Percent composition of the mixture is as follows:

Name	%
BDCB and DCA	63
DCB	22
CA	1
BCA	12
Unknown	2

Submission Evaluation

Neutral oils sample 77-1625 has primary eye irritation properties but is not a significant primary skin irritant by the standard test. In the acute dermal toxicity study, the material showed signs of dermal irritation. This substance could produce pseudo-sensitization in humans as a consequence of repeated irritation.

The acute dermal toxicity was estimated to be more than 10 g/kg and less than 20 g/kg. The number and the types of clinical observations conducted do not permit acceptance of these figures. In the primary skin irritation study, one rabbit which had 0.5 ml applied to the skin died within 24 hours. Assuming that this rabbit weighed 3 kg, the application was 0.15 ml/kg and assuming a specific gravity of 1, the actual dose becomes less than 0.2 g/kg. This is 1/50 of their estimated toxic dose. The fact that the 20-g/kg group required to 4 to 14 days for fatality suggests that rabbits receiving 10 mg/kg were not observed for a long enough period.

***NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.**

The erratic weight gain, particularly by males on the 10-g/kg dose, suggests that histological examination of the viscera should have been carried out. Clinical observations on the 20-g/kg rabbits suggest CNS effects. The acute toxicity study in rats indicates an LD_{50} of approximately 2 g/kg. The groups of animals used in this experiment are not large enough to determine whether one sex is more sensitive than the other. The clinical observations in the rats are inadequate for determining the extent of CNS action. It is interesting that some rats become hypoactive at the dose of 1 g/kg. This may be a manifestation of either CNS depression or cardiovascular depression. Although there were no fatalities at 1.0 and 1.5 g/kg, the weight gains were erratic at these doses and the females gained less than the males. This suggests that prolonged effects are occurring. The organs of the rats should have been examined histologically.

Current Production and Use

The test material apparently represents some sort of a chemical waste or by-product. No other information is available.

Comments/Recommendations

(a) The submitter should provide a description of the uses and/or formation of the test compound.

(b) The submitter should be asked to provide their rationale for the submission of this information as offering reasonable support for the conclusion that these neutral oils present a substantial risk of injury to health or the environment.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: December 4, 1978

Approved ____________

SUBJECT: Status Report 8EHQ-0778-0221

Revision
Needed ____________

FROM: Frank D. Kover
Assessment Division, OTE/OTS

TO: Joseph J. Merenda, Director
Assessment Division, OTE/OTS

Submission Description

Results of a mutagenicity evaluation of VC-948 (N-methoxy-4-chlorobenzamide) in the unscheduled DNA synthesis assay in human cells.

Submission Evaluation

VC-948 was marginally positive in this test without activation. However, when mixed with an activating liver S-9 preparation, VC-948 caused a significant positive dose response in the unscheduled DNA synthesis test. Because VC-948 was positive in this assay, the chemical may have oncogenic and mutagenic potential and should, therefore, be handled with caution.

VC-948 should be tested further for its ability to cause gene mutation and chromosome aberrations. This information would more precisely characterize the spectrum of genetic end points that may be induced as a result of exposure to the chemical. An in vitro malignant transformation assay may be advisable to further define the oncogenic potential of VC-948.

Current Production and Use

No information was located in the secondary sources consulted.

Comments/Recommendations

(a) The submitter should be requested to provide a description of the annual production and uses of this material.

(b) Part VI of the March 16, 1978 Policy Statement specifies that for in vitro experiments and tests "consideration may be given to the

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NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

existence of corroborative information, if necessary to reasonably support the conclusion that a chemical presents a substantial risk." The submitter should be asked to present any additional information in its possession that supports the conclusion that VC-948 poses a substantial risk. In most cases, a single positive response in an in vitro assay is not sufficient to trigger reporting under Section 8(e), and the submitter should consider the potential for exposure before submitting such information.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: August 21, 1978

Approved ___________

SUBJECT: Status Report 8EHQ-0778-0222

Revision
Needed ___________

FROM: Frank D. Kover
Assessment Division, OTE/OTS

TO: Joseph J. Merenda, Director
Assessment Division, OTE/OTS

Submission Description

Results of acute toxicity studies of dicyclopentadiene alcohol (DCPD alcohol) in rabbits and rats.

Submission Evaluation

The identity of the compound tested is not revealed. Lot #C-10-3 is described as a "pale yellow viscous liquid," while Lot #C2-7-2 is described as a "semi-viscous yellow liquid." At any rate, this substance is an extreme primary eye irritant. It is a mild primary skin irritant. No studies were submitted to determine whether this alcohol is a sensitizing agent or is capable of producing pseudo-sensitization as a result of chronic primary skin irritation.

Female rabbits were approximately twice as sensitive as males to the effect of skin application of DCPD alcohol. No data were submitted on the weight gain of untreated rabbits to establish baseline laboratory conditions. Even at 2.5 g/kg, one female had erratic weight gain; at 5 g/kg one male rabbit lost weight from day 6 to day 14 and one female had low weight gain for the same period. The significance of these data cannot be established in the absence of blood levels to determine how much of the compound was absorbed from each dose administered. Female rats also were more sensitive than males to this alcohol. Weights of untreated rats were not included in the experiment; therefore, it is not possible to evaluate baseline conditions of the lab. Even at 1.3 g/kg, female rats had very little significant weight gain from day 7 to day 14. It is a valid assumption that chronic toxicity may be developing even following a single dose. The weight gain for the males receiving 2 g/kg is somewhat high. This excess weight gain may be due to induction of enzymes in the liver which may account for the lesser sensitivity of males. Female rats receiving 2 g/kg again showed insignificant weight gain from day 7 to day 14.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: October 20, 1978

Approved____________

SUBJECT: Status Report 8EHQ-0778-0223

Revision
Needed ____________

FROM: Frank D. Kover
Assessment Division, OTE/OTS

TO: Joseph J. Merenda, Director
Assessment Division, OTE/OTS

Submission Description

Results of an acute toxicity study of methyl-m-chlorobenzoate in Daphnia magna.

Submission Evaluation

The information contained in this report is too sketchy to indicate substantial risk. The report contains no description of the test material; data describing its solubility in water and in the acetone carrier are especially needed. Concentrations of the test material were not measured by the experimenter as only nominal concentrations were reported.

The observed 48-hour LC_{50} (17 mg/l) indicates that methyl-m-chlorobenzoate is probably not extremely toxic in the acute sense; however, chronic or behavioral effects may occur at lower levels that might coincide with expected environmental concentrations. Actual test concentrations may be much lower than the nominal concentration reported, indicating that the compound may be more toxic than the figures suggest.

Current Production and Use

No information is available on the production and use of this material; it is contained in the TSCA Candidate List.

Comments/Recommendations

This chemical was the subject of an earlier submission (8EHQ-0678-0201).

(a) The information requested in the follow-up to the earlier submission should be checked for inclusion in this report.

(b) The submitter should be asked to support his contention that the information contained in this note reasonably supports a conclusion of substantial risk.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

Current Production and Use

No information was located in the secondary sources consulted.

Comments/Recommendations

Several other submissions have concerned this compound (8EHQ-0478-0138P; 8EHQ-0678-0180; 8EHQ-0678-0207).

(a) Analytical data must be provided by the submitter.

(b) The submitter should be asked to present his rationale for submission of this information as offering reasonable support for the conclusion that DCPD alcohol presents a substantial risk of injury to human health or the environment.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: August 21, 1978

Approved ______________

SUBJECT: Status Report 8EHQ-0778-0224

Revision
Needed ______________

FROM: Frank D. Kover
Assessment Division, OTE/OTS

TO: Joseph J. Merenda, Director
Assessment Division, OTE/OTS

Submission Description

Acute toxicity studies of VEL 4578 [N'-(2-isopropoxycarbonyl-1-methylvinylmethoxythiophosphoramido) acetamidine] in rats and rabbits.

Submission Evaluation

VEL 4578 is a thiophosphate ester and bears a class resemblance to malathion; it would be expected to exhibit high toxicity. The rapid absorption from the eyes and skin caused death within 24 hours. The acute oral toxicity data have little significance because: (a) the amount of acetone that the rats received is not indicated, and (b) no dose less than 50 mg/kg was administered.

Delayed death up to 24 hours in the acute oral toxicity study suggests poor absorption or slow transformation to an anticholinesterase in the body. However, the inhalation data suggest high toxicity for this compound. This would indicate that either the absorption was more rapid by this route or the lung has more effective converting enzymes (to produce a more toxic metabolite). The deaths following inhalation of VEL 4578 appeared to be due to asphyxiation following constriction of the airway smooth muscle; other signs prior to death are typical of cholinergic activation.

Current Production and Use

No information was located in the secondary sources consulted.

Comments/Recommendations

(a) The submitter should provide a description of the uses of VEL 4578.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

(b) The submitter should be asked to provide their rationale for the submission of this information as offering reasonable support for the conclusion that VEL 4578 presents a substantial risk of injury to health or the environment.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: September 20, 1978

SUBJECT: Status Report 8EHQ-0778-0225

FROM: Frank D. Kover
Assessment Division, OTE/OTS

TO: Joseph J. Merenda, Director
Assessment Division, OTE/OTS

Approved ____________

Revision
Needed ____________

Submission Description

Acute toxicity studies of VEL 4441 [N'-(2-methoxycarbonyl-1-methylvinylmethoxythiophosphoramido)-N,N-dimethylformamidine] in rabbits and rats.

Submission Evaluation

VEL 4441 is a malathion-type compound and therefore would be expected to exhibit extreme toxicity, probably due to marked anticholinesterase activity. This surmise is borne out by the lethality produced when small amounts of the material are applied to the eye and skin of rabbits. The acute oral toxicity in rats also places this compound in a highly toxic class, as do the inhalation data. The symptoms following inhalation suggests that most of the compound was inhaled as an aerosol rather than in solution. It apparently took approximately 20 minutes for sufficient compound to be dissolved in biological fluids to produce cholinergic symptoms with the resultant constriction of airway smooth muscle causing the gasping and death.

Current Production and Use

No information was located in the secondary sources consulted.

Comments/Recommendations

VEL 4441 was the subject of an earlier submission, 8EHQ-9678-0172.

(a) The submitter should provide a description of the uses of VEL 4441.

(b) The submitter should be asked to provide his rationale for the submitted information as offering reasonable support for a conclusion that VEL 4441 poses a substantial risk to health or the environment.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: December 4, 1978

SUBJECT: Status Report 8EHQ-0778-0226

FROM: Frank D. Kover
Assessment Division, OTE/OTS

TO: Joseph J. Merenda, Director
Assessment Division, OTE/OTS

Approved ______________

Revision Needed ______________

Submission Description

Acute oral toxicity study of methyl-m-chlorobenzoate in mice.

Submission Evaluation

The purity of the test material was not stated. In the absence of control data obtained on untreated animals and in the absence of a description of the signs immediately preceding death, one would assume that this ester acted like similar esters such as methyl benzoate and methyl salicylate. The corn oil probably delayed absorption and thereby gave a more favorable LD_{50} than is warranted. Any pathological changes observed in the lungs, liver, and blood vessels (particularly those in the brain) would be important and should have been reported in this study. The erratic weight gains in both sexes could be due to the compound's effects either on the liver or on the lungs.

Current Production and Use

No information was located in the secondary sources consulted.

Comments/Recommendations

(a) The submitter should provide a description of the uses of this compound.

(b) The submitter should be asked to provide their rationale for the submission of this information as offering reasonable support for the conclusion that methyl-m-chlorobenzoate presents a substantial risk of injury to human health or the environment.

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*NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: August 21, 1978

Approved___________

SUBJECT: Status Report 8EHQ-0778-0227

Revision
Needed ___________

FROM: Frank D. Kover
Assessment Division, OTE/OTS

TO: Joseph J. Merenda, Director
Assessment Division, OTE/OTS

Submission Description

Acute toxicity studies of the sodium salt of tribromophenol in rabbits and rats.

Submission Evaluation

Sodium tribromophenate was found to be a severe primary eye irritant. No data were submitted for the concentration of the solution applied to the eye nor for the pH of the solution. The compound was found to be a mild skin irritant. No data were submitted for the sensitizing potential and for chronic irritation or pseudo-sensitizing potential of the compound.

The LD_{50} values obtained by skin application of sodium tribromophenate to rabbits have little significance. No data for untreated rabbits were submitted to establish baseline laboratory conditions. Blood levels were also not submitted; consequently, it is impossible to determine the amount of test dose that was absorbed. The headings of Tables 6 through 9 are mislabeled as representing an LD_{50} study in rats. The data in these tables indicate a study of dermal irritation in rabbits. Item 4 on p. 43 reports the body weight changes of the presumed rats. The actual starting weights suggest that the animals used were rabbits.

Current Production and Use

Please refer to one of the below-referenced submissions for this information.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

Comments/Recommendations

Several other submissions have been received on tribromophenol (8EHQ-1277-0024; 8EHQ-0178-0032; 8EHQ-0278-0069; 8EHQ-0378-0095; 8EHQ-0678-0198).

(a) The submitter should be asked to address the concerns raised in the evaluation section above.

(b) The submitter should be asked its rationale for the submission of this information as offering reasonable support for the conclusion that tribromophenol presents a substantial risk of injury to health or the environment.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: August 23, 1978

Approved ______________

SUBJECT: Status Report 8EHQ-0778-0228

Revision
Needed ______________

FROM: Frank D. Kover
Assessment Division, OTE/OTS

TO: Joseph J. Merenda, Director
Assessment Division, OTE/OTS

Submission Description

Report of an industrial hygiene survey in which the only notable finding was that employee exposure to ethylene dichloride (EDC) during one cleaning process exceeded the NIOSH 15 ppm recommended peak exposure limit by 10 ppm.

Submission Evaluation

Insofar as the EDC levels did not exceed the current OSHA standard of 50 ppm, one is hard pressed to find reasonable support for the conclusion that this finding represents a substantial risk of injury to health or the environment.

Comment/Recommendations

(a) The submitter must provide documentation that the findings reported in this submission reasonably support a conclusion of substantial risk of injury to health or the environment.

(b) This submission should be transmitted to NIOSH and OSHA for appropriate action.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: August 21, 1978

SUBJECT: Status Report 8EHQ-0878-0229

FROM: Frank D. Kover
Assessment Division, OTE/OTS

TO: Joseph J. Merenda, Director
Assessment Division, OTE/OTS

Approved ___________

Revision Needed ___________

Submission Description

Acute toxicity studies of Benzoflex S-552 in rabbits and rats.

Submission Evaluation

The chemical identity of Benzoflex S-552 is not presented in the submission. The only description offered is a CAS number which is not contained in the TSCA Candidate List.

The test material was described as "off white chunks." Presumably these chunks were powdered and the powder was applied to the eyes and skin of the test animals.

The material was a primary eye irritant. This could have been due to mild abrasion of the cornea by the powder. If the substances is highly insoluble in body fluids or is a high-molecular-weight plastic, no absorption is to be expected by any route. Since this compound is most likely not absorbed, the fluctuations in the individual rabbit weights suggests that the baseline values obtained by the performing laboratory need review.

Current Production and Use

The Condensed Chemical Dictionary identifies "Benzoflex" as a trademarked series of plasticizers which are dibenzoesters of dipropylene glycol or any of several polyethylene glycols. These compounds are used as primary plasticizers for vinyl resins and in adhesive formulations. In addition, some grades are used in food packaging adhesives.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

Comments/Recommendations

(a) The submitter must provide the chemical identity of Benzoflex S-552.

(b) The submitter should be asked to provide their rationale for submission of this information as offering reasonable support for the conclusion that Benzoflex S-552 presents a substantial risk of injury to health or the environment.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: August 28, 1978

SUBJECT: Status Report 8EHQ-0878-0230

FROM: Frank D. Kover
Assessment Division, OTE/OTS

TO: Joseph J. Merenda, Director
Assessment Division, OTE/OTS

Approved ______________

Revision Needed ______________

Submission Description

The submission consists of an updated mortality study in workers exposed to epichlorohydrin as well as other information on epichlorohydrin (ECH). This submission represents a follow-up to a report forwarded to Mr. Douglas Costle on September 26, 1977, which presented the initial results of this epidemiology study.

Submission Evaluation

The study of Enterline and Henderson entitled "Updated Mortality in Workers Exposed to Epichlorohydrin" reasonably supports the conclusion that epichlorohydrin presents a risk of human cancer. The authors' statement that the current data are "highly suggestive of a carcinogenic risk for man" is an accurate one.

The study is generally well reported and appears to have been adequately conducted. The 98% overall follow-up rate (97% in Deer Park and 99.5% in Norco) and the 94% overall rate for cause-of-death verification (by death certificate review; 94% in Deer Park and 95% in Norco) are both excellent figures.

The most salient effect measures are the Standard Mortality Ratios (SMR's) for workers from both plants (Norco and Deer Park) combined (Table 4) who were followed for at least 15 years from the onset of exposure. Respiratory system cancer, leukemia, and cancer of all sites combined are in excess of expected values.

None of the SMR's reach statistical significance at the 95% level. The authors would have done better to report a point or closed-interval value for p to enable a less arbitrary statistical assessment of the role of chance.

Qualitative factors tend to counter the possibility that the observed cancer excesses were the result of random association. The same cancer types (respiratory system and leukemia) were elevated in workers from both plants.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

The low SMR's for all causes combined and for most of the nonmalignant individual causes indicate otherwise healthy populations. The SMR's for leukemia, respiratory cancer, and all cancer rose as the length of follow-up increased.

The importance of the separate calculations for men followed for at least 15 years is the allowance for the induction period of cancer. The SMR's for leukemia, respiratory cancer, and all cancer were higher in this subset than in the total study population. All 14 cancer deaths listed in Table 5 occurred at least 14 years after initial exposure.

The accompanying graph, based on the limited information of the nine lung cancer deaths, does not reveal an apparent relationship among age at first exposure, duration of exposure, and induction period. Nevertheless, Table 5 suggests a greater increased risk with "heavy to moderate" exposure than with "light to nil" for total and respiratory cancer. Such indications of dose-response are generally felt to contribute to the certainty of a suspected etiologic relationship.

It was correctly pointed out by the authors that the relative youth of the cohort (mean age, 48 years) may have acted to understate the actual risk, since for many of the men it may have not been long enough since initial exposure for the induction period to have transpired. The preponderance of cancer deaths (especially lung cancer deaths) in the 2-year update period supports this notion.

The risks for the Norco workers may have been underestimated by the use of state mortality rates for calculating expected deaths. Louisiana's white male respiratory cancer rate in 1950-69 was the highest in the Nation (51.97 per 100,000). Texas (the location of Deer Park) ranked 17th with a rate of 38.52 (U.S. rate, 37.98).

The observation that 10 of the 14 cancer deaths in Table 5 were Deer Park employees is not very remarkable since 10.44 of the 17.51 expected cancer deaths were for the Deer Park group also. The concentration of Deer Park cancer deaths among men with experience in the glycerine department ($X^2 = 2.45$, d.f. = 1, $.1 < p < .2$) is intriguing but not interpretable without exposure information for that plant area.

The letter of August 7 raises questions concerning pathological diagnosis by cell type, the lack of quantitative exposure data, and the likelihood that historical exposure levels were much higher than those present today. Information on cell types would be useful but not essential for the detection of increased risk. Monitoring data are rarely available in occupational studies of chronic disease and cannot be considered a mandatory requirement. The difference between past and present exposure levels is irrelevant to the question of whether the substance should be considered a human carcinogen.

The letter also raises the question of multiple exposure, especially by cigarette smoking. Smoking histories would certainly be valuable and possibly less difficult to obtain than he estimates. Nevertheless, Dr. William Lloyd of OSHA contends that no reported excess lung cancer risk in any occupationally exposed cohort has yet been explained by differential smoking patterns. Consequently, a presumption against confounding by smoking appears to be reasonable in the absence of data to the contrary.

It would be useful to wait for further follow-up of these cohorts or to conduct additional studies on similarly exposed workers to establish more firmly this association with cancer. In light of the present data and their close consistency with animal and *in vitro* studies, however, it is reasonable to conclude that exposure to epichlorohydrin increases the risk of respiratory system cancer and possibly of leukemia in humans.

Current Production and Use

Estimated U.S. consumption of epichlorohydrin in 1973 was 345 million pounds. The major uses of ECH are in the production of synthetic glycerins, epoxy resins, ECH elastomers, and various small-volume uses (e.g., manufacture of surfactants, pharmaceuticals, textile coatings, glycidyl ethers, paper-sizing agents and water treatment resins). A small amount of annual ECH production apparently finds use as an "inert ingredient" in a number of pesticides.

Comments/Recommendations

(a) This submission and status report should be transmitted to the Interagency Testing Committee, OSHA, NIOSH, CPSC, OAPQS, OSW, OWHM, ODW, OPP, IAO, and ORD.

(b) It is of interest to note that the Agency recently received information from Dr. Norton Nelson of New York State Medical University reporting that epichlorohydrin was a positive carcinogen in a long-term rat inhalation study.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE:	OCT 20 1978		
SUBJECT:	Status Report* 8EHQ-0978-0230 Supplement	Approved	______________
FROM:	Frank D. Kover Assessment Division, OTE/OTS	Revision Needed	______________
TO:	Joseph J. Merenda, Director Assessment Division, OTE/OTS		

Submission Description

Results of a study of testicular function among epichlorohydrin (ECH) workers at the submitter's Deer Park, Texas and Norco, Louisiana plants. The study concludes that the employees tested demonstrated no evidence of an ECH-related impairment of testicular function. There was no observed correlation between sperm count and either duration or intensity of exposure to the chemical.

Submission Evaluation

The suggestion by the authors of the report that men who suspected themselves to be subfertile or who believe themselves to be heavily exposed to ECH would be particularly likely to participate in this investigation is open to question. It might as well be argued that men who suspected themselves to be subfertile would avoid the study in order to avoid disclosing their inadequate virality to other workers.

The low number of non-participant responders to the questionnaire (see page 13) may support the latter version. The submitter is making a sincere attempt to determine the reasons for failure to participate in the study. Nevertheless, one must question whether the non-participants will give frank answers if the administering physicians are employees of the submitter.

The laboratory aspects of this study were carried out very well. The confirmatory analysis by a second lab was an excellent step.

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*NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

Current Production and Use

Estimated U.S. consumption of ECH in 1973 was 345 million pounds. The major uses of ECH are in the manufacture of synthetic glycerins, epoxy resins, and ECH elastomers. Small-volume uses include the production of surfactants, pharmaceuticals, textile coatings, glycidyl ethers, paper-sizing agents, and water treatment resins.

Comments/Recommendations

This information was actually intended as an addendum to an earlier notice submitted on epichlorohydrin (see 8EHQ-0878-0230).

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: August 21, 1978

SUBJECT: Status Report 8EHQ-0878-0231

Approved ____________

Revision Needed ____________

FROM: Frank D. Kover
Assessment Division, OTE/OTS

TO: Joseph J. Merenda, Director
Assessment Division, OTE/OTS

Submission Description

Results of a 28-day range finding study of chlorendic anhydride in rats.

Submission Evaluation

The study suggests that chlorendic anhydride will cause a loss of body weight in both male and female rats and that this effect is dose related. The weight loss cannot be attributed to a reduction in food intake. The definitive study should include exhaustive examination of microscopic sections of body organs.

Current Production and Use

Please refer to one of the below-referenced studies for this information.

Comments/Recommendations

Several other submissions by the same submitter have involved chlorendic anhydride (8EHQ-0278-0058; 8EHQ-0278-0059; 8EHQ-0378-0094; 8EHQ-0378-0101; 8EHQ-0478-0127; 8EHQ-0478-0134; 8EHQ-0678-0206).

The submitter should be asked to provide their rationale for submission of this information as offering reasonable support for the conclusion of substantial risk.

***NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.**

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: August 16, 1978

SUBJECT: Status Report 8EHQ-0878-0234

FROM: Frank D. Kover
Assessment Division, OTE/OTS

TO: Joseph J. Merenda, Director
Assessment Division, OTE/OTS

Approved __________

Revision
Needed __________

Submission Description

Preliminary results on a study investigating the oncogenic potential of vinyl bromide during chronic inhalation exposure in rats. The present information consists of the results of the histopathological examination of rats sacrificed at the 18-month point in this 24-month study. This information was actually submitted to the Agency on a "for your information" basis.

Submission Evaluation

Vinyl bromide appears to be as potent as vinyl chloride for producing liver angiosarcomas. Primary angiosarcomas of the liver were seen in male and female rats exposed to vinyl bromide at 50, 250, and 1,250 ppm. In addition, a single angiosarcoma was found in a mesenteric lymph node from a single male rat in the 10-ppm group. The report concludes that "enough liver angiosarcomas were observed in these sacrificed rats to conclude that the exposure of male and female rats to vinyl bromide at 50, 250 and 1250 ppm for periods of up to 18 months has a carcinogenic effect in the liver. The occurrence of a single angiosarcoma in the mesenteric lymph node from a male rat exposed to 10 ppm of vinyl bromide is suggestive of a carcinogenic effect. The spontaneous incidence of angiosarcoma in the laboratory rat is very low and the occurrence of a neoplasm of this type in one of ten sacrificed rats is suggestive of an exposure related effect."

Current Production and Use

Vinyl bromide is used as an intermediate in organic synthesis and for the preparation of plastics by polymerization and copolymerization. The major use of vinyl bromide is in the production of flame-retardant synthetic fibers. An example of this is a modacrylic fiber (produced by

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NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

one of the companies co-sponsoring the vinyl bromide study) which is composed of 79-81% acrylonitrile, 9% vinyl bromide, 8% vinylidene chloride, and 2-4% other. The fiber is used primarily in children's sleepwear. It is produced in a batch polymerization operation with a suspension polymerization medium and a wet spinning process. This method of production would probably preclude residual vinyl bromide monomer in the final product; however, this has not been demonstrated conclusively thus far.

Comments/Recommendations

Following review of this information, the Assessment Division's conclusion is that the study should more properly have been submitted pursuant to Section 8(e) of TSCA. The basis for this conclusion is as follows:

(a) The study indicates that vinyl bromide appears to be as potent a carcinogen as vinyl chloride for producing liver angiosarcomas. Part V(a)(2) of the March 16, 1978 Policy Statement declares that the Agency considers reportable substantial risk information to include "any pattern of effects or evidence which reasonably supports the conclusion that the chemical substance or mixture can produce cancer...." In addition, the introduction to Part V states that "human health effects listed in Subpart (a) ... are so serious that relatively little weight is given to exposure...." However, in this case the annual production of vinyl bromide is (at a minimum) somewhere between 100,000 and 1.5 million pounds per year. The actual value is likely somewhat higher, as this estimate accounts only for one company.

(b) Part VI(1) of the Policy Statement discusses preliminary results of studies and declares that "not only should final results from such studies be reported, but also preliminary results from incomplete studies where appropriate."

Thus, on the basis of these two points, the Assessment Division has concluded that this information offers reasonable support for the conclusion that vinyl bromide presents a substantial risk of injury to health and that the information is of the type required for submission under the "Statement of Interpretation and Enforcement Policy" (43 FR 11110).

(a) A complete copy of the experimental protocol should be requested from the sponsoring organization.

(b) The Assessment Division should immediately undertake efforts to determine the feasibility of chemical analysis of vinyl bromide-based fabrics to determine residual vinyl bromide content.

(c) This submission and status report should be immediately forwarded to NIOSH, OSHA, CPSC, and OSW.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: September 21, 1978

Approved ______________

SUBJECT: Status Report 8EHQ-0878-0236

Revision
Needed ______________

FROM: Frank D. Kover
Assessment Division, OTE/OTS

TO: Joseph J. Merenda, Director
Assessment Division, OTE/OTS

Submission Description

This submission reports the results of an NCI bioassay of p-cresidine which concluded that the material is carcinogenic to rats and mice. The submitter is reporting the information in light of its status as a manufacturer of p-cresidine.

Current Production and Use

The material is used as a dye or dye intermediate.

Comments/Recommendations

(a) The submitter should be asked to provide a description of the uses of p-cresidine.

(b) The notifier should be informed that submission of NCI bioassay results is not required for compliance with Section 8(e) of TSCA.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: MAY 0 1 1979

SUBJECT: Status Report 8EHQ-0878-0237

FROM: Walter W. Kovalick, Jr., Director
Program Integration Division (TS-793) Walter W. Kovalick Jr.

TO: Joseph J. Merenda, Director
Assessment Division (TS-792)

Submission Description

Mason, Texas, Release raw natural gas to Squaw Creek

On August 3, 1978, a pipeline carrying raw natural gas containing traces of hydrogen sulfide was damaged by boulders carried by flash flood waters. Approximately 14,112 barrels of material was released; ninety-eight percent to the atmosphere and two percent (282 barrels) was released to the stream.

The incident was reported on August 3, 1978 to the Texas Water Quality Board, Texas Railroad Commission and the State Department of Transportation. On August 14, 1978 EPA Region VI was also notified.

Submission Evaluation

The incident does not appear to warrant reporting as a substantial risk. As outlined in the March 16 Policy Statement emergency incidents of environmental contamination are to be reported if the chemical substance or mixture involved presents adverse human health effects or environmental effects which because of "the pattern, extent, and amount of contamination 1) seriously threatens humans with cancer, birth defects, mutation, death, or serious or prolonged incapacitation, or 2) seriously threatens nonhuman organisms with large-scale or ecologically significant population destruction." There is no indication that any adverse effects from the release of the gas have or will occur due to the nature of the incident and the chemicals involved.

Comments/Recommendations

This submission should be noted as an example of the type of information not required for submission under Section 8(e) emergency incidents of environmental contamination. The notifier should be sent a copy of this status report.

cc: A. Edelman (TS-793)
F. Kover (TS-792)

*NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: September 29, 1978

SUBJECT: Status Report 8EHQ-0978-0238

FROM: Frank D. Kover
Assessment Division, OTE/OTS

TO: Joseph J. Merenda, Director
Assessment Division, OTE/OTS

Approved ______________

Revision
Needed ______________

Submission Description

Report of an employee who suffered a skin rash following exposure to a fuel oil.

Submission Evaluation

The submission is incomplete in that it does not include a medical report of the incident giving the physician's diagnosis, treatment, and description of the final outcome of the situation.

Comments/Recommendations

(a) The submitter should provide the additional information noted in the evaluation section. The submitter should also be asked to provide additional discussion of the basis for their decision that this information offers reasonable support for the conclusion that fuel oil presents a substantial risk of injury to health. The information provided thus far is insufficient to permit an Agency evaluation.

(b) Following receipt and evaluation of any follow-up information, consideration should be given to transmittal of this submission to NIOSH and OSHA.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: October 23, 1978

Approved ____________

SUBJECT: Status Report 8EHQ-0978-0239

Revision Needed ____________

FROM: Frank D. Kover
Assessment Division, OTE/OTS

TO: Joseph J. Merenda, Director
Assessment Division, OTE/OTS

Submission Description

The results of mutagenicity teesting of chlormephos (S-chloromethyl-O,O-diethylphosphorothiolothionate) in several Salmonella strains.

Submission Evaluation

No evaluation is possible without a full copy of the results from the complete test.

Current Production and Use

The submitter reports that it is evaluating this material to determine its potential for use as a pesticide.

Comments/Recommendations

(a) This submission and status report should be transmitted to OPP.

(b) The submitter should be asked to provide a full copy of the final report upon its completion.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: JUL 23 1979

SUBJECT: Status Report* 8EHQ-0978-0239
Supplement

Approved JM 7/28/79

Revision
Needed

FROM: Frank D. Kover, Acting Chief
Chemical Hazard Identification Branch

TO: Joseph J. Merenda, Director
Assessment Division

Submission Description

The final report of mutagenicity tests of chlormephos (S-chloromethyl-O,O-diethyl phosphorothiolothionate; CAS No. 24934-91-6) in several Salmonella strains. This new data is supplementary to a previous submission (8EHQ-0978-0239).

Submission Evaluation

The Ames' Salmonella gene mutation test with microsomal activation (Ames' test) measures the capacity of a chemical, and/or its metabolites, to induce gene mutations in the bacterium Salmonella typhimurium. This system can detect both base pair changes and small deletions and additions in the DNA of the bacterium. There is a good qualitative correlation between positive Ames' test results and positive oncogenicity test results when the same chemical is tested. Quantitative extrapolations from the Ames' test are presently not valid.

With and without metabolic activation, TA-100 was positive (7 times the control value with activation and 3.6 times the control value without activation). TA-1535 was positive only with metabolic activation (28 times the control value). In no instance was a positive dose response seen. The dose response is largely negative and toxicity was observed in the positive response range. Some of the mutants seen at the highest dose should be restreaked onto plates minus histidine to check whether or not they are true revertants. In addition, TA-100 and TA-1535 should be tested at lower doses to establish the existence of a dose response.

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Current Production and Use

As reported in a previous submission (8EHQ-0978-0239), chlormephos is being tested for potential use as a pesticide. No other information on the production and use of this material was located in the secondary sources consulted. This chemical is not listed in the TSCA Inventory.

Comments/Recommendations

In the absence of further data, the mutagenicity tests performed should be considered positive. A positive Ames' test indicates that the chemical and/or its metabolite is mutagenically active in a bacterium. This raises a concern that the chemical might be an oncogen or a mutagen in mammals.

a) This submission and status report should be transmitted to SPRD-OPP, NIOSH, OSHA, and FDA.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF TOXIC SUBSTANCES

MEMORANDUM

SUBJECT: Status Report 8EHQ-0978-0240

FROM : Walter W. Kovalick, Jr., Director
Program Integration Division (TS-793)

TO : Joseph J. Merenda, Director
Assessment Division (TS-792)

THRU : Marilyn C. Bracken, DAA
Program Integration and Information (TS-793)

Submission Description

East Chicago, Indiana, Gas release of isobutane

On August 13, 1978, at a plant site subsidiary of the submitter, approximately 250 barrels of gas composed of 70% isobutane and 30% isopentane were released. The release occurred when a tank battery was overfilled, resulting in venting to the atmosphere of the gas through a relief valve.

Local police and fire officials as well as the State Air Pollution Control Board (Indiana Department of Health), the local Department of Air Quality Control, and EPA Region V were notified.

Submission Evaluation

The vapors of isobutane and isopentane are both narcotic and asphyxiant. A single exposure on non-asphyxiant concentrations of either hydrocarbon would produce inebriation from which there would be complete recovery. These vapors are not sufficiently irritating to produce significant pulmonary reactions. Single exposures to asphyxiant concentrations would usually result in rapid complete recovery. It is possible that some individual might sustain temporary injury to the hippocampus of the brain with resultant temporary amnesia for recent events.

In the absence of histopathology of the brain, lung, liver, and kidney, it is not possible to evaluate the case of the boy who died two days after the incident.

Current Production and Use

Isobutane and isopentane are large-volume hydrocarbons derived from the fractional distillation of petroleum. Isobutane is used in organic synthesis and as a refrigerant, fuel, aerosol propellant, and instrument calibration fluid. Isopentane finds use as a solvent, blowing agent for polystyrene, and intermediate in the manufacture of chlorinated derivatives.

Comments/Recommendations

The incident appears to have been handled adequately; no further action is indicated.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: NOV 2 4 1978

SUBJECT: Status Report* 8EHQ-0978-0244

FROM: Frank D. Kover
Assessment Division, OTE/OTS

TO: Joseph J. Merenda, Director
Assessment Division, OTE/OTS

Approved ______________

Revision Needed ______________

Submission Description

The submission consists of a variety of studies, including two sponsored by the submitter and several references uncovered during the course of a literature search, reporting the reproductive effects of benzene. The submitter concludes, on the basis of its analysis of the information, that in experimental animals benzene has weak toxic effects on pregnant females and fetuses at 50 ppm. In addition, weak teratogenic effects were observed at 500 ppm. The submitter goes on to note that the literature search produced limited data that may suggest a gonadal effect in male animals at a concentration of 80 ppm; no studies dealing with effects on females were uncovered in the literature search. A summary table enclosed with the submission also indicates that fetotoxic effects were observed in rats in one study at a concentration of 10 ppm benzene, although this finding is not referred to in the body of the submission.

Submission Evaluation

The submission states that the purpose of these studies is to determine the reproductive effects of benzene inhalation in female experimental animals. The emphasis on females appears to be due in part to the failure of the submitter's overall literature search to identify pertinent references detailing the reproductive effects of benzene in females. As noted, the submitter has called attention to literature references reporting gonadal effects of benzene in male animals. Nevertheless, despite the submitter's discussion of these articles only in the context of reported male fertility effects, one of the cited studies, that by Hett and Maak (1938; submission reference no. 5), states that oral and inhalation administration of benzene to mice severely affected the gonads of both males and females. In addition, a separate publication by Vera and Kinnunen (Acta Obstet. et Gynecol. Scandanav., 26, 433-452, 1946; not cited by the submitter) reports the results of a study in female workers who had been chronically exposed to benzene vapors and who subsequently developed serious gynecological problems.

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*NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

Discussion of Benzene's Effects in Females

Hett and Maak (1938). The authors presented several observations on the effects of benzene vapors in female mice. The study found degeneration of ovarian follicles, chiefly the large ones; and ova (eggs) were multinucleate. The latter observation is probably indicative of some abnormality in chromosomal division or possibly, but less likely, parthenogenesis (reproductive development of an ovum without its being fertilized). In either case, embryo malformation (and likely subsequent abortion) will result from such benzene-induced abnormal ova.

Vera and Kinnunen (1946). The study investigated 30 female workers who had subjective symptoms of benzene exposure following one to ten years of chronic occupational exposure to the substance. The benzene exposure levels experienced by the women are not specified in the article. Of the 30 women studied, 12 had complaints related to the generative tract. Two had excessive monthly bleeding, another had very irregular menstruation, and six had sparse uterine bleeding (the three remaining women apparently only had subjective complaints). No menstrual peculiarities had been reported by the women prior to entering their present occupations. In some instances, the women complained of infertility and in those cases where the cause for the infertility was not clear, examination for the patency (condition of being open) of the fallopian tubes was undertaken. In two such instances, the tubes were patent such that ova could successfully migrate; the authors surmised that benzene was responsible for the sterility complaints. Although the objective findings were varied, the subjective symptoms of the patients were very much alike: most complained that the slightest physical trauma led to bruises and that frequently the bruises appeared spontaneously; tiredness, dizziness, and headaches were also common. The objective findings for the 12 women were manifold. A definite leukopenia (reduction in the number of leukocytes in the blood) was present in four patients and in most of the women there was a decrease in the number of neutrophilic leukocytes and thrombocytes (blood platelets). A comparison of the gynecological examination and the blood picture established that the occurrences were parallel. The thrombocytopenia may relate to the bruising and bleeding findings. Furthermore, it was established that hypoplasia (abnormal decrease in the number of cells) of the ovaries was the cause for the observed cases of sparse menstruation. On page 436 of this paper, the authors point out that women are more sensitive than men to benzene poisoning. This greater sensitivity is claimed to be particularly apparent in pubescent girls and older pregnent women. In summary, the toxic manifestations of benzene in the female reproductive organs are expressed as excessive monthly bleeding, irregular intermenstrual bleeding, sparse bleeding, or as sterility.

For the experimental part of this study, the authors injected five female rabbits with benzene on a daily basis until blood changes occurred. The blood changes were characterized by transient leukocytosis (increase in the number of blood leukocytes) and finally leukopenia. A similar alteration was observed in the numbers of granulocytes, especially the neutrophilic leukocytes. The number of thrombocytes decreased to approximately 1/2 the normal value. In addition, the vagina in all animals was dry and had little secretion. The ovaries were more firm than usual and their size was reduced to 1/4 of normal. The size reduction of the ovaries was so severe in some cases that it was difficult to find the organs at autopsy. Microscopic examination of the ovaries revealed hypoplasia in addition to other findings. (Note that the blood changes and ovarian hypoplasia seen in the rabbits are similar to the changes seen in women workers.) Finally, the distribution of the chromosomes in the ova deviated from normal as the chromosomes in most cases lay scattered and disorganized in the egg cell. Fertilization, if possible, of such an egg would lead to an early spontaneous abortion. The blood dyscrasias observed in the rabbits (and the female workers) may also contribute to the spontaneous abortion process because the alteration in the mother's blood chemistry may preclude normal embryonic development.

Submitter-sponsored studies. The teratology, embryotoxicity, and fetotoxicity studies sponsored by the submitter cannot be used directly for determining benzene's capacity to induce reproductive effects in humans. In particular, the expression of teratogenicity (broadly defined as "all manifestations of abnormal development, i.e., death, malformation, growth retardation, and functional disorder," from James G. Wilson, Environment and Birth Defects, Academic Press, 105, 1973) is more complex in humans than in rodents. The greater complexity extends to other phases of reproduction and is due in part to the characteristics of human placental attachment which permits the intermingling of the fetus' blood with that of the mother. This intermingling can provoke immune reactions which may lead to the natural, spontaneous abortion of a maldeveloping fetus. In the rat, however, the degree of placental exchange is minimal. The experimental design of the present studies is inadequate because it does not take into account the duration of exposure required to produce the toxic effects of benzene (especially blood decrasias, chromosome changes, and ovarian alterations) that are relatable to human mutagenesis or teratogenesis and the subsequent rejection of the embryo by spontaneous abortion.

As noted, the submitter-sponsored 1975 and 1977 teratology studies are inadequate because the exposure conditions do not coincide with the conditions required to produce the blood and ovarian changes seen in chronically exposed females. The 1975 study reports no bone marrow or teratogenic effects in rats following 9-10 days of inhalation exposure during the middle trimester of pregnancy. Although this is the normal procedure for such studies, the relevance of these conditions to environmental benzene exposure patterns is somewhat suspect. Human exposure to benzene can in time produce significant bone marrow and possibly endocrine changes. Human pregnancies can occur during this period of hematologic and endocrine change; thus, this animal study does not correspond to the human exposure conditions known to produce systemic changes and possibly teratogenesis or mutagenesis.

The most significant aspect of the 1977 study is that fetotoxicity was observed at a concentration of 10 ppm benzene. The other reports provided identify the toxic benzene concentration as 300 to 500 ppm. This is the lowest concentration of benzene reported to induce fetotoxic effects and represents an important, new finding. The current occupational standard is a time-weighted average of 10 ppm.

The fetotoxicity (Green _et al_., 1977) and embryotoxicity (Murray _et al_., 1978) studies suffer from the same experimental inadequacies described above. On page 10, Green _et al_. cite a study by Gofmekler (1968) that foudn decreased litter size in female rats exposed to benzene for 24 hours/day, for 10-15 days prior to impregnation. Such a protocol yields more significant results because the changes in maternal hematopoiesis and ovarian effects are already in progress when conception occurs. While such exposure conditions do not, in all likelihood, reflect the human situation, such conditions do point up the reproductive problems that may be encountered given long-term exposure to benzene prior to conception.

Discussion of the Other Submitted Studies

The Wolf _et al_. (1956) article indicates that leukopenia and other bone marrow changes develop slowly in laboratory animals following chronic inhalation exposure to benzene. Diechmann _et al_. (1963) report that exposure to 800 ppm of benzene required at least 14 days before evidence of bone marrow depression was seen in rats. Exposure to 40 ppm required at least 5 weeks. By way of contrast, the submitter-sponsored (1975) teratology study exposed pregnant female rats for 9 days (days 6 through 15 of gestation) to 10, 50, or 500 ppm of benzene. The submitter-sponsored 1977 teratology study exposed pregnent female rats to 10 or 40 ppm of benzene for the same 9 day period used in the 1975 study. The Green et al. (1977) fetotoxicity study also exposed pregnent rats for the same 9 day period to 100, 300, or 2,200 ppm of benzene. The Murray et al. (1978) embryotoxicity study exposed mice and rabbits to 500 ppm of benzene from days 6 through 15 (mice) and 6 through 18 (rabbits) of gestation. As found by Deichmann et al., no chronic effects will develop within such limited exposure periods.

Overall Evaluation

The experimental design of all of the submitter-sponsored studies is inadequate because it does not take into account the duration of exposure required to produce the toxic effects of benzene that are relatable to human mutagenesis, teratogenesis, and/or the process of spontaneous abortion. Benzene-induced chromosome aberrations, blood dyscrasias, and ovarian changes may, singly or in combination, act to prevent or terminate a pregnancy due to mutation, gestational difficulties, and/or hormal imbalance. Chronic exposure of females to benzene can produce reproductive dysfunction or malfunction leading to any of nonviable ova, spontaneous abortions, or possibly, teratoid offspring. Finally, low level exposure (10 ppm) to benzene at critical points during gestation can induce fetotoxicity. Two publications, one of which is not mentioned in the submission, report effects on the ovary and ova that could result in nonviable or teratoid development of the embryo. The first (Hett and Maak, 1938) reported that benzene caused blood dyscrasias, ovarian atresia, and the production of multinucleate ova in female mice. The second (Vera and Kinunen, 1946) has illustrations of chromosomal disarray and rupture in the ova of rabbits chronically injected with benzene. In addition, the animals' ovaries were reduced to 1/4 normal size due to ovarian hypoplasia. This study also described various blood changes in the rabbits; such changes could contribute to gestational difficulties. The article describes human gynecological conditions induced by occupational exposure to benzene vapors at unspecified levels. These conditions are relatable to hematopoietic, mutagenic, teratogenic, or ovarian disturbances. In the female workers, benzene produced several acquired blood dyscrasias including leukopenia, thrombocytopenia, and neutropenia. The chemical was implicated by the authors (Vera and Kinnunen) as the cause of two cases of sterility in the workers and several instances of abnormal uterine bleeding. Blood dyscrasias are known to cause abnormal menstruation in humans and such a bleeding condition can be life-threatening in patients with aplastic anemia, leukemia, or thrombocytopenia (all of which can be caused by benzene). In addition, such blood changes can adversely impact in utero development of offspring. Vera and Kinnunen reported that a comparison of the gynecological examination and the blood picture established that the conditions were parallel and that women are more sensitive than men to benzene poisoning.

The submitter-sponsored 1977 teratogenicity study demonstrated fetotoxic effects in rats exposed to 10 ppm of benzene during the middle trimester of gestation. This is the lowest dose reported for this effect and is a significant finding.

Thus, in summary, the available information indicates that benzene exposure in females can lead to acquired blood dyscrasias, abnormal uterine bleeding, and, possibly, sterility (due to ovarian distrubances), mutagenesis, and/or teratogenesis (due to benzene-induced malformed embryos that are subsequently aborted spontaneously).

Current Production and Use

Approximately 9.8 billion lbs. of benzene were produced domestically in 1976. It is used as a chemical intermediate for the manufacture of a number of large volume chemicals (ethylbenzene; dodecylbenzene; cyclohexane; phenol; nitrobenzene; maleic anhydride; chlorobenzene; diphenyl, etc.) and as a solvent and anti-knock gasoline additive.

The current standard for occupational exposure to benzene is a time-weighted average (TWA) of 10 ppm, with short excursions as high as 50 ppm.

Comments/Recommendations

Several other submissions have concerned benzene (8EHQ-1277-0027; 8EHQ-0378-0112; 8EHQ-0678-0106). The Assessment Division intends to continue its evaluation of this submission and will enlist the assistance of other appropriate offices.

a) This submission, status report, and the translation of the EPA-identified article by Vera and Kinnunen should be transmitted to NIOSH, OSHA, CPSC, OAQPS, ORD, OMSAPC, OWWM, OSW, ODW, OWPS, and LTAT/AD/OTE with a request that they provide any additional information on the effects of benzene in females to the Assessment Division (OTS) or to OAQPS, the lead office for preparation of the Phase I report on benzene.

b) The submitter should be asked to describe the "further research" that is planned on the effects of benzene on male and female reproductive organs and function.

c) An 8(d) rule to collect health and safety studies on benzene should be considered.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: December 4, 1978

SUBJECT: Status Report 8EHQ-1078-0245

FROM: Frank D. Kover
Assessment Division, OTE/OTS

TO: Joseph J. Merenda, Director
Assessment Division, OTE/OTS

Approved ____________

Revision Needed ____________

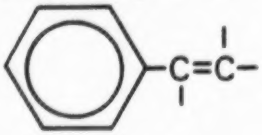
Submission Description

The submission consists of two reports. The first presents the results of a literature review and an in-house assessment of the estrogenic potential of a polystyrene waste stream. The second report concerns the results of a laboratory evaluation of the estrogenic potential of a polystyrene production condensate in female rats.

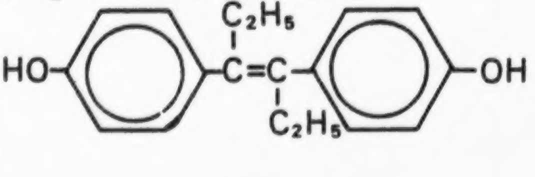
Submission Evaluation

The three Russian articles by Zlobina reporting disturbances of the menstrual cycle and related effects among workers employed in Soviet polystyrene manufacturing plants and the submitter's laboratory findings that polystyrene production by-products have estrogenic action in rats are the essential health effects reported in this submission. The estrogenic substances in the by-product are probably low-molecular-weight condensation products of styrene. The synthetic estrogen, diethylstilbestrol (DES; a condensation product of styrene, see below) is a classic example of an agent causing cancer development in women and their children who were in uterus at the time the synthetic estrogen was taken by the mother. The induction period was at least 15-20 years in the daughters and longer in the mothers. The effect on male offspring has not been established with certainty.

The low estrogenic potency of the submitter's waste material has little relevance to the hazard. Exposure is likely to occur over long periods. The important thing is that estrogenic action is there.



styrene monomer



DES

***NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.**

Current Production and Use

Annual production of styrene monomer is on the order of 4-6 billion pounds. Polystyrene manufacture (high impact and straight) represents approximately 55% (or 2.2-2.3 x 10^9 pounds) of all styrene consumed annually in the U.S. The submitter reports that the quantity of its polystyrene waste stream product produced is generally less than 0.01% of the submitter's total polystyrene production. If this value holds for the entire industry, approximately 2.2-3.3 x 10^5 pounds of this material will be generated annually. The submitter's normal disposal practice for this waste stream is incineration.

Related Past and Present Activities

A draft Hazard Assessment on styrene and ethylbenzene is available from the AD.

Comments/Recommendations

This submission is somewhat related to an earlier one (8EHQ-0678-0202) which reported carcinogenic action associated with polyethylated benzene tails, an ethylbenzene waste stream.

This submission and status report should be transmitted to OAQPS, ORD, OWHM, and OSW. The cover letter notes that the submission has been forwarded by the submitter to OSHA, NIOSH, and FDA.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: November 2, 1978

SUBJECT: Status Report 8EHQ-0978-0246

FROM: Frank D. Kover
Assessment Division, OTE/OTS

TO: Joseph J. Merenda, Director
Assessment Division, OTE/OTS

Approved ______________

Revision
Needed ______________

Submission Description

Information concerning the health hazards of Raney nickel (a spongy, finely divided form of nickel) in exposed workers.

Submission Evaluation

Raney nickel appears to be much more active than very fine nickel dust on human tissues. It probably reacts readily with active proteins present in the skin to produce inflammation; hence, the blisters due to accumulation of exudate. A similar phenomenon has been described in workers who had powdered magnesium metal driven into their skin during lathing procedures. Magnesium reacted with tissue fluid to release hydrogen.

Many nickel compounds including the metal (which slowly reacts with tissue proteins) have been shown to be carcinogenic and skin-sensitizing agents. The carcinogenicity (probably) and the sensitization (definitely) involve immune mechanisms. It is not unexpected that Raney nickel (in some respects, the most active form of nickel) would be a potent skin irritant, sensitizing agent, and carcinogen.

Current Production and Uses

No annual production figures are available; however, Raney nickel is used as a catalyst for hydrogenation.

Comments/Recommendations

This submission and status report should be transmitted to OSHA and NIOSH.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: December 4, 1978

SUBJECT: Status Report* 8EHQ-1078-0247

FROM: Frank D. Kover
Assessent Division OTE/OTS

TO: Joseph J. Merenda, Director
Assessment Division, OTE/OTS

Approved ______________

Revision Needed ______________

Submission Description

The submission reports results of a pilot teratology study with a Solvent Refined Coal (SRC-I) process intermediate stream called "filter feed" in albino rabbits. The test animals were exposed dermally and exhibited some evidence of fetal toxicity in their offspring.

Submission Evaluation

This submission establishes that "filter feed" can penetrate the skin and thereby adversely affect the course of pregnancy. The size of the test groups is to small to support the conslusion offered that filter feed is nonteratogenic. The calculations comparing rabbit to human exposure are inappropriate in the absence of a more extensive study. There is no evidence that 1% methylcellulose facilitated absorption through the skin. The channels for skin absorption in rabbits differ from those in humans. The pastelike material may have greater access to sebaceous glands and hair follicles in human skin.

The following observations are significant in light of their observation in such small test groups:

(1) Inadequate weight gain and actual loss of weight in mothers

(2) Unexplained spontaneous abortion in one female

(3) A possibly dose-related occurrence of resorption

(4) The unexplained occurrence of spina bifida (developmental defect in the bony encasement of the spinal cord) in one fetus

(5) The lower mean body weight of the progeny

(6) The decreased 24-hour survival of young rabbits.

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*NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

Current Production and Use

Filter feed is one of the process streams associated with the SRC-I process which is being operated as a pilot plant by a company associated with the submitter, under a contract with U.S. DOE. SRC-I filter feed is made up of process solvent (either decalin or tetralin), SRC-I product, ash (mineral residue), unreacted coal, and light oils. The constituents are produced or flow at the following average hourly rates (as determined in two equilibrium production runs at this 50-ton/day SRC pilot plant):

	lb/hr
Wash solvent	242
Process solvent	4,357
Light oils	86.5
Ash	340
Unreacted coal	147.5
SRC-I product	2,240

Gaseous products (vent gases, fuel gas, steam, and hydrogen sulfide) are removed from the process stream before it encounters a rotary drum filter as the "filter feed."

Comments/Recommendations

SRC products were the subject of one other submission (8EHQ-0778-0217).

(a) The submitter should be asked to describe any additional testing that is planned to further define the teratogenic potential of SRC-I filter feed.

(b) This submission and status report should be transmitted to U.S. DOE, OSHA, NIOSH, and ORD.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: October 20, 1978

SUBJECT: Status Report 8EHQ-1078-0248

FROM: Frank D. Kover
Assessment Division, OTE/OTS

TO: Joseph J. Merenda, Acting Director
Assessment Division, OTE/OTS

Approved ______________

Revision Needed ______________

Submission Description

Preliminary results from a reproductive effects study of ethylene oxide in rats. The one-generation study involved inhalation exposure to ethylene oxide for 6 hours/day, 5 days/week at concentrations of 0, 10, 133, and 100 ppm for 12 weeks prior to mating and during the gestation period.

Submission Evaluation

The information provided is not sufficient to permit an evaluation of the toxic effects of ethylene oxide. Histological examination of the adrenals, thymus, and gonads will probably establish the significance of the reproductive effects seen at 100 ppm. More data will be required to assess the depression of weight gain observed at 33 ppm.

The submitter claims that they have no evidence to indicate that their workers have experienced such reproductive effects. It is not clear what evidence was examined to determine the absence of reproductive effects in workers. The submitter should clarify this point.

Production and Use

Annual production of ethylene oxide in each of 1975 and 1976 was greater than 4 billion pounds. Ethylene oxide is used as an intermediate for the production of ethylene glycol, acrylonitrile, ethanolamines, glycol ether, and nonionic surfactants. It is also used as a sterilant and fumigant.

Comments/Recommendations

(a) The submission and status report should be transmitted to OPP, OSHA, NIOSH, FDA, ITC, and OAQPS.

(b) Request submitter to provide additional information as noted in the evaluation section.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: OCT 31 1979

SUBJECT: Status Report 8EHQ-1078-0249

Approved JM 10/31/79

Revision Needed ______________

FROM: Frank D. Kover, Chief
Chemical Hazard Identification Branch

TO: Joseph J. Merenda, Director
Assessment Division, OTE/OTS

Submission Description

The submission summarizes the results of a bioaccumulation study conducted with tetraethyl (TEL) and tetramethyl lead (TML) in eastern oysters. TEL was found to accumulate to a potentially dangerous extent (bioconcentration factors were 17,600 and 18,138 for exposures of 0.1 and 0.8 ug TEL/l, respectively) while TML showed little bioacummulation at similar levels. The submitter states that "bioaccumulation could only occur in the unlikely event of a transportation catastrophe involving bulk quantities" and, therefore,does not believe that the data are subject to a TSCA Section 8(e) reporting requirement.

Submission Evaluation

This submission indicates that high levels of TEL (1-14 ppm in tissue) could be found in oyster flesh when very low levels of TEL (0.1-0.8 ug/l) are present in water. Adult oysters, and shellfish in general, are known metal accumulators. Previous studies have demonstrated lead accumulation in eastern oysters. Kopfler and Mayer (1973) found bioconcentration of total lead to 0.67-0.88 ppm (water levels at 0.5 to 3.0 ug/l). Pringle et al. (1968) found accumulations from 17-75 ppm lead when the total environmental lead levels ranged from 0.025-0.1 ppm. The data in the literature indicate a bioconcentration factor of 640-1300 for total lead, an order of magnitude below that reported by the submitter for TEL. Evidence of the bioconcentration of TEL in oysters is significant for several reasons. Because oysters are a food source for humans, evidence of bioconcentration of TEL is important from a human exposure perspective and its human health effects should be examined. Secondly, bioconcentration of TEL could impact the oyster population itself, although the toxic level of TEL to oysters is not known. Shellfish are known to

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*NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

accumulate lead (and other heavy metals) even though inorganic lead is toxic to oysters at fairly low concentrations in water. The 12 and 18-week LC_{50}s for oysters are 0.5 and 0.3 mg lead/l; lead levels in H_2O as low as 0.1 to 0.2 mg/l produced changes in gonadal and mantle tissue (NAS, 1972). Data on other aquatic organisms (fish; NAS, 1972) show that tetraethyl lead is 10-100 times more toxic than inorganic lead; if the extrapolation holds true for shellfish, oyster populations could be endangered by slight TEL levels in water. Damage to oyster populations would have grave environmental and commercial consequences. It is necessary to know the duration of the submitter's study and whether any toxic effects were looked for or observed in the oysters. It is not clear whether oyster-lead concentrations were measured as wet or dry weight. Furthermore, it is assumed that the submitter used adult oysters, although this was not stated.

The submitted results indicate the potential for accumulation of lead to high levels (1.7 and 14.5 ppm) in a human food source. Oysters should not be taken from areas contaminated with TEL. Continuous exposure to low levels of TEL would be far more dangerous than a spill of the material. The reasonably quick purging mechanism in oysters would protect them from long-term contamination resulting from a spill, but continuous exposure could result in the accumulation of dangerous levels of lead. A significant question is whether TEL is stable in the environment. If not, the true hazards of this material might be better indicated by studies on its environmental by-products.

Because tetraethyl lead bioconcentrates to high levels, is toxic to aquatic organisms at low levels, and has a widely dispersive use (in gasoline), it is potentially quite dangerous in the aquatic environment. Tetramethyl lead, on the other hand, bioconcentrates to a minimal extent, and is toxic at relatively high levels (96-hr. LC_{50} is 84 ppm for bluegills and 13.5 ppm for tidewater silversides (Dawson *et al*., 1977)). Based on this information, it appears to present a much lower risk.

Current Production and Use

A review of the production range (includes importation volumes) statistics for tetraethyl lead (CAS No. 78-00-2) as listed in the initial TSCA Inventory (1977) has shown that between 100 million and 201 million pounds of this chemical were produced/imported in 1977. This production range information does not include any production/importation data claimed as confidential by the person(s) reporting for the TSCA Inventory, nor does it include any information which would compromise Confidential Business Information. The data submitted for the TSCA Inventory, including production range information, are subject to the limitations contained in the Inventory Reporting Regulations (40 CFR 710).

A review of the production range (includes importation volumes) statistics for tetramethyl lead (CAS No. 75-74-1) as listed in the initial TSCA Inventory (1977) has shown that between 1.1

million and 11 million pounds of this chemical were produced/imported in 1977. This production range information does not include any production/importation data claimed as confidential by the person(s) reporting for the TSCA Inventory, nor does it include any information which would compromise Confidential Business Information. The data submitted for the TSCA Inventory, including production range information, are subject to the limitations contained in the Inventory Reporting Regulations (40 CFR 710).

TEL and TML are used as commercial gasoline anti-knock compounds. It is anticipated that the annual production and consumption of lead anti-knock compounds will decrease due to the increased use of nonleaded gasolines in many newer cars.

Comments/Recommendations

In the Agency's opinion, this information should have been submitted under Section 8(e) of TSCA. The March 16, 1978 "Statement of Interpretation and Enforcement Policy" specifies that information reporting bioaccumulation of a material beyond 5,000 times water concentration should be reported when coupled with potential for widespread exposure and any non-trivial adverse effect. The submitter reported that TEL has a bioconcentration factor between 17,600 and 18,138, depending on the initial concentration. Given the formidable production volumes and the widespread use of leaded gasoline as a fuel for boats, cars, etc., the potential for widespread exposure certainly exists. TEL bioconcentration is of importance to organisms (including man) that consume oysters directly or are consumers in their food web. The effects of TEL on direct oyster predators (flat-worms, mollusks, echinoderms, crustaceans, fishes (black drum, toad fish, cow-nosed ray) and birds (diving ducks) (Galtsoff, 1964)) have not been determined, however, very low levels of TEL are acutely toxic to bluegill sunfish, a fish bioassay model. The TEL, 96-hr. LC_{50} for bluegills is 0.2 ppm (Verschueren, 1977 and Dawson et al., 1954). While not direct oyster predators, they are found in low salinity rivers and bays at the upper range of oyster fresh water tolerance. Bluegills are not an accepted test model for estuarine or marine fishes which may be oyster predators, but in the absence of data with more appropriate species they are good indicators of a general fish response to TEL. It is not unlikely that some estuarine and marine fishes could be equally or more sensitive to TEL than bluegills (this relationship is true for tetramethyl lead, according to Dawson et al., 1977). On the basis of these points, the Agency has determined that this submission does meet the criteria as reportable Section 8(e) information and, therefore, should have been submitted as such.

(a) This submission and status report should be transmitted to FDA, U.S. Fish and Wildlife Service, ORD, OWWM, DOT, DOE, CPSC.

(b) The submitter should be asked to provide a full copy of the final report of this study and to describe the test protocols in detail. Any toxic effects observed in the test oysters should be described. The submitter should also be asked to provide any available data on the stability of TEL in aquatic systems.

(c) The need for an assessment of TEL as an aquatic contaminant should be further evaluated by CHIB.

References

National Academy of Sciences. 1972. Water Quality Criteria. EPA-R3-73-033.

Galtsoff. 1964. The American Oyster. Vol. 64. Fishery Bulletin of the Fish and Wildlife Service. Washington, DC.

Dawson *et al*. 1977. The Acute Toxicity of 47 Industrial Chemicals to Fresh and Saltwater Fishes. J. Hazard Mater. 1:303.

Kopfler and Mayer. 1973. Proc. Nat. Shellfish Assoc. 63:27.

Pringle *et al*. 1968. J. Sanit. Eng. Div., Proc. Am. Soc. Civil Eng. 94(5A3):455.

Turnbill *et al*. 1954. Toxicity of Various Refinery Materials to Fresh Water Fish. Industrial and Engineering Chemistry. 46:324.

Verschueren. 1977. Handbook of Environmental Data on Organic Chemicals. Van Nostrand Reinhold Company. New York.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: October 26, 1978

SUBJECT: Status Report 8EHQ-1078-0250

Approved ____________

Revision Needed ____________

FROM: Frank D. Kover
Assessment Division, OTE/OTS

TO: Joseph J. Merenda, Director
Assessment Division, OTE/OTS

Submission Description

Preliminary results from a 24-month inhalation study of ethyl acrylate in rats and mice. This report summarizes the pathology data from the 3- and 6-month sacrifices. The study is supported by the submitter and three other companies.

Submission Evaluation

The squamous metaplasia (replacement of normal epithelial cells by cells with greater embryonic potential) observed in both mice and rats may be the result of chronic irritation, although it may represent a preneoplastic change leading to tumor formation. The final results will provide the answer. The nasal tissue hyperplasia (increase in the number of cells) likewise may be due to either chronic irritation or to a beginning tumor; the final report will tell.

Current Production and Use

Annual production of ethyl acrylate in 1976 was reported to be over 295 million pounds. It is used in the manufacture of polymers, acrylic paints, and chemical intermediates.

Comments/Recommendations

(a) Consideration should be given to the preparation of a Chemical Hazard Information Profile on ethyl acrylate.

(b) The submitter should be asked to provide the results of future sacrifices as well as a copy of the final report.

***NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.**

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: December 4, 1978

SUBJECT: Status Report 8EHQ-1078-0251

Approved ______________

Revision Needed ______________

FROM: Frank D. Kover
Assessment Division, OTE/OTS

TO: Joseph J. Merenda, Director
Assessment Division, OTE/OTS

Submission Description

Results of a life-time skin painting study of 2,2'-di(sec-butoxy) acetophenone (correct molecular formula is $C_{16}H_{24}O_3$; molecular formula in submission is incorrect) in mice. The submitter concluded that the chemical is a weak carcinogen in mice on the basis of this study, but that this information does not, of itself, necessarily indicate that similar effects will result in humans.

Submission Evaluation

The summary of the test data in the submission suggests that this compound may be a weak carcinogen. This conclusion cannot be evaluated with certainty in the absence of experimental protocols.

Ketones of this type affect absorption of ultraviolet radiation. Benzophenone derivatives are used in sunburn preparations to prevent absorption of ultraviolet light by the skin. To determine whether this chemical initiates photochemical reactions in skin, it would be necessary to expose treated animals to ultraviolet radiation.

Current Production and Use

The tested chemical was developed as a photoinitiator in acrylate based photo-cure coating systems begining about 1974. During its development and limited commercial use, the submitter reports that approximately 8,000 pounds were produced. The photoinitiator was used commerically by the submitter and one other unspecified company; samples of the material were distributed to several other companies. In January, 1978, the submitter reportedly decided to withdraw from the photo-cure chemical coatings market. The submitter notes that tests conducted with 2,2'-di(sec-butoxy) acetophenone in the wet coating indicate that a significant portion of the material is consumed in the photo-curing process.

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Comments/Recommendations

The submitter notes that a structurally similar chemical, 2,2'-diethoxyacetophenone, was used for similar purposes. Although this compound has not been tested by skin-painting, the submitter is advising those who have used or are using 2,2'-diaethoxyacetophone of the results of their study on 2,2'-di(sec-butoxy) acetophenone.

a) This submission and status report should be transmitted to NIOSH and OSHA.

b) A Chemical Hazard Information Profile should be prepared on these two compounds.

c) A complete copy of the mouse skin-painting study should be requested from the submitter.

d) This submission and status report should be sent to the ITC's lead reviewer for acetophenone.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: JAN 1 9 1979

SUBJECT: Status Report* 8EHQ-1078-0252

Approved ______

Revision Needed ______

FROM: Frank D. Kover
Assessment Division, OTE/OTS

TO: Joseph J. Merenda, Director
Assessment Division, OTE/OTS

Submission Description

The submission consists of a preliminary report on a pilot teratogenicity study conducted in rabbits by dermal application with a Solvent Refined Coal (SRC-I) processed intermediate stream called "wet mineral residue."

Submission Evaluation

The term "dysmorphogenesis" is gradually replacing the term "teratogenesis" in the sense that dysmorphogenesis refers to any failure in the normal development of a species in contrast to the limited definition of a teratogen as something causing a monstrous anatomical malformation (e.g., thalidomide). Some teratologists do not limit their observations to the short period of organogenesis but also consider the period from fertilization to sometime after delivery of the neonate as embracing the field of teratogenesis.

It is significant that 150 mg/kg applied to the skin afforded sufficient absorption into the doe and possibly into the fetus or embryo to cause increased numbers of resorptions and decreased numbers of live young.

Current Production and Use

Wet mineral residue is one of the constituents of SRC-I filter feed which is one of the process streams associated with the SRC-I process that is being operated as a pilot plant by a company associated with the submitter under a contract with U.S. DOE. SRC-I filter feed is made up of process solvent (either decalin or tetralin), SRC-I product, mineral residue (ash), unreacted coal, and light oils.

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Comments/Recommendations

SRC products were the subject of two other submissions (8EHQ-0778-0217; 8EHQ-1078-0247).

a) The submitter should be asked to provide a full copy of the final report from this study. The submitter should also be asked to describe any additional testing that is planned to further define the teratogenic potential of SRC-I filter feed or its components. This is of some interest because submission 8EHQ-1078-0247 reported fetotoxic effects in rabbits following dermal exposure to SRC-I filter feed.

b) This submission and status report should be transmitted to U.S. DOE, OSHA, NIOSH, and ORD.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: January 18, 1979 Approved__________

SUBJECT: Status Report 8EHQ-1078-0253

Revision
Needed __________

FROM: Frank D. Kover
Assessment Division, OTE/OTS

TO: Joseph J. Merenda, Director
Assessment Division, OTE/OTS

Submission Description

This report summarizes interim data obtained through the first 48 weeks of a lifetime mouse skin-painting study conducted to determine the carcinogenic activity of "intermediate clarified oil solvent extract," a highly aromatic petroleum oil.

Submission Evaluation

The submitted data establish that the intermediate clarified oil solvent extract is a potent carcinogen when applied to the skin of mice. Sufficient material appears to be absorbed through the skin of the mice to result in subacute or chronic intoxication as indicated by impaired gain in body weight and by excess mortality. Histological examination will establish whether the chronic toxicity involves liver, kidneys, adrenals, and/or other organs.

Current Production and Use

No information on the production and use of this material was located in the secondary sources consulted. The submitter reports that oils of this type are contained in catalytic cracker process streams in most refineries; however, there is no information available as to the number of refineries in which this type of oil is actually extracted as a unique product. The submitter also reports that the material is used as a secondary plasticizer for PVC resins and as a component of roof coatings.

Comments/Recommendations

(a) This submission and status report should be transmitted to NIOSH, OSHA, ORD, OSW, CPSC, and LTAT(AD).

(b) Chemical should be evaluated as a potential Section 4(f) candidate.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

EPA FORM 1320-6 (REV. 3-76)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: MAR 30 1979

SUBJECT: Status Report 8EHQ-1078-0254

Approved JM 4/2/79

Revision Needed

FROM: Frank D. Kover
Assessment Division, OTE/OTS

TO: Joseph J. Merenda, Director
Assessment Division, OTE/OTS

Submission Description

This submission reports the results of an Ames assay of 1,1,2,2-tetrabromoethane (TBE).

Submission Evaluation

The Ames *Salmonella* gene mutation test with microsomal activation (Ames test) measures the capacity of a chemical and/or its metabolite to induce gene mutations in the bacterium *Salmonella typhimurium*. This system can detect both base pair changes as well as small deletions and additions in the DNA of the bacteria. There is a good qualitative correlation between positive Ames test results and positive oncogenicity test results when the same chemical is tested. Quantitative extrapolations from the Ames test are presently not valid.

The experimental protocol employed by the testing laboratory is not indicated; this should be requested. The positive control with methylcholanthrene was run only with activated liver cultures (+S-9); a positive control without activation should have also been included in the protocol. As it was, the positive control with S-9 activation gave positive responses only for strains TA-98 and TA-1537; it is therefore uncertain that the other 3 strains (TA-100, TA-1535, and TA-1538) will respond positively under the conditions of the experiment. The meaning of the dash (-) in the results table is unclear; this needs clarification.

There are indications of toxicity in the assays conducted with activated liver microsomes (+S-9). The number of revertants (mutants) in several of the *Salmonella* tester strains (TA-98, TA-1535, and TA-1538) decrease with an increase in the concentration of TBE. However, under the conditions of the test, a positive mutagenic response was observed in strains TA-100, TA-1535, TA-1537, and TA-1538 at the highest dose only; in addition, the response was quite strong. However, the meaning of such a response at only one dose is uncertain because none of the putative revertants were restreaked to insure that reversion has occurred, and that the change is, in fact, heritable.

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Considering (1) the observed toxicity, (2) the positive response at the high dose only, and (3) the failure to restreak the revertants, the following is a possible explanation for the observed results. The tester bacteria, which lack the ability to synthesize histidine (an essential amino acid), are plated in media containing a trace of histidine so that the bacteria can undergo a few cell divisions (this is often necessary for the induction and expresssion of mutations). Normally all of the cells compete for the available histidine, deplete it rapidly, and, if no reversion (mutation) occurs, enter a state of equilibrium and form a milky background (as opposed to colonies). However, if most of the bacterial cells are killed, the survivors have few nearby competitors for the available histidine and the surviving bacteria are able to form colonies even though no genetic reversion has occurred (thus the need for restreaking). Because of the points raised in this discussion, one must question the conclusions reached by the testing facility concerning a threshold value for the mutagenic activity of TBE. On the basis of limited available experimental data, any discussion of a "threshold" for mutagenicity is premature. At any event, the experiment should be repeated and the putative revertants restreaked on plates without histidine. If the explanation advanced above is accurate, the "revertants" will be genetically identical to the histidine-dependent tester strains. Because the Ames plate test may provide negative or equivocal results with TBE, the chemical should be tested with an Ames suspension assay or a mammalian in vitro gene mutation assay.

The analytical purity of the test material was not provided; this information should be supplied, if available.

Current Production and Use

No production figures are available for 1,1,2,2-tetrabromoethane. TBE is used for separating minerals by specific gravity, as a solvent for fats, oils, and waxes, and as a fluid in liquid gauges.

Comments/Recommendations

(a) The comments and questions raised in the evaluation section above should be brought to the submitter's attention.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

APR 0 9 1979

OFFICE OF TOXIC SUBSTANCES

MEMORANDUM

SUBJECT: Status Report 8EHQ-1078-0255

FROM : Walter W. Kovalick, Jr., Director
Program Integration Division (TS-793)

TO : Joseph J. Merenda, Director
Assessment Division (TS-792)

THRU : Marilyn C. Bracken, DAA
Program Integration and Information (TS-793)

Submission Description

Washington, Pennsylvania, Spill of Red Ink into Little Chartiers Creek

On October 12, 1978, during truck-unloading operations, approximately ten gallons of Sun-Cor Flexographic 74 red ink was spilled into Little Chartiers Creek. The ink is formulated from a mixture of water, glycol, alcohol, acrylic binder, wetting agents, surfactants, clay pigments, and lead molybdenate chromate pigment.

The incident was reported to EPA on October 12 and the Commonwealth of Pennsylvania Regional Office in Pittsburgh on October 13.

Submission Evaluation

The incident does not appear to warrant reporting as a substantial risk. As outlined in the March 16 Policy Statement, emergency incidents of environmental contamination are to be reported if the chemical substance or mixture involved presents adverse human health effects or environmental effects which because of "the pattern, extent, and amount of contamination 1) seriously threatens humans with cancer, birth defects, mutation, death, or serious or prolonged incapacitation, or 2) seriously threatens non-human organisms with large-scale or ecologically significant population destruction." There is no indication that any adverse effects from the release of the ink have or will occur due to the small quantity released and nature of the chemical mixture.

Comments/Recommendations

This submission should be noted as an example of the type of information not required for submission under Section 8(e) emergency incidents of environmental contamination. The notifier should be sent a copy of this status report.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: January 18, 1979

SUBJECT: Status Report 8EHQ-1178-0256

Approved ____________

Revision
Needed ____________

FROM: Frank D. Kover
Assessment Division, OTE/OTS

TO: Joseph J. Merenda, Director
Assessment Division, OTE/OTS

Submission Description

The submission consists of a preliminary report on the acute inhalation toxicity of a process residue from the production of triethylene diamine by the catalytic dehydration of 2-hydroxyethyl piperazine in a mixture of biphenyl and biphenyl oxide in rats.

Submission Evaluation

The residue is not adequately characterized analytically and, therefore, the significance of the inhalation study can only be guessed. The outcome of the exposure is not surprising. The pathologist should have no difficulty in determining to what extent the cause of death can be attributed to precipitation of particles in the lungs vs. the alkalinity of the residue.

Current Production and Use

The submitter claims that no commercial use has been found for this residue and notes that the material is a waste product which is currently incinerated.

Comments/Recommendations

(a) The submitter notes that additional information will be provided in a follow-up report. The submitter should be asked to include the analytical composition of the residue in that follow-up report.

(b) This submission and status report should be transmitted to NIOSH, OSHA, and OSW.

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: FEB [illegible]

SUBJECT: Status Report* 8EHQ-1178-0258

Approved JM 5/5/79

Revision Needed

FROM: Frank D. Kover
Assessment Division, OTE/OTS

TO: Joseph J. Merenda, Director
Assessment Division, OTE/OTS

Submission Description

The submission apparently concerns a worker's complaint that 2 materials used in his printshop caused drowsiness, dizziness, and headaches. The specific chemical compositions of the 2 cited materials ("multilith deglazing solvent" and "ink roller desenitizer") are not reported.

Submission Evaluation

Many "solvents" and similar materials are known to cause dizziness, headaches, and other effects if ventilation is not adequate. Insufficient information has been provided by the submitter to permit an adequate evaluation.

Current Production and Use

The materials are apparently used in printing operations; no other information is available.

Comments/Recommendations

This submission does not appear to offer reasonable support for a conclusion of substantial risk. There is no indication that the affected worker experienced "serious or prolonged incapacitation" following exposure to the cited materials. Neither is there any indication that headaches and dizziness are newly documented effects following exposure to these materials.

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A) The submitter should be asked to provide further information on the reported incidents: physician's report or some other professional evaluation (nurse, hygienist, etc.) of the symptoms and conditions of exposure (the vague description provided is not adequate); a more complete description (chemical composition) of the implicated products and an indication that the observed effects represent new information not available to the Administrator (the products' manufacturers or distributors should be able to provide the information needed to determine this).

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

SUBJECT: Status Report* 8EHQ-1178-0259

Approved JM 2/11/79

Revision Needed ________

FROM: Frank D. Kover
Assessment Division, OTE/OTS

TO: Joseph J. Merenda, Director
Assessment Division, OTE/OTS

Submission Description

The submission reports that 2,3,4,4,4-pentachloro-2-butenoic acid, n-butyl ester is highly toxic to rabbits on dermal application. The chemical was incorrectly listed in the original submission.

Submission Evaluation

The extreme toxicity of this compound should have been further investigated. It is impossible to evaluate the data as presented because a non-lethal dose of the compound was never tested and the number of animals used in the experiment was not specified. In addition, the analytical purity of the test compound and the identification of any contaminants should be provided.

Current Production and Use

There are no data in the secondary literature on the production or commercial uses of this compound. A search of Chemical Abstracts titles reveals that 2,3,4,4,4-pentachloro-2-butenoic acid, n-butyl ester can be used as a catalyst for the production of synthetic rubbers and other polymers by free radical polymerization. If it is used commercially for this purpose, the potential for residue contamination of the final product becomes important.

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*NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

Comments/Recommendations

Although the chemical is highly toxic and the dermal LD value reported is in the range desired for the reporting of such studies under Section 8(e), the submitter's discussion of the "fact or probability of occurrence" criterion (Part V of the March 16, 1978 policy statement) as it relates to this chemical indicates that submission does not appear to be required for this information; however, this point should be confirmed through a follow-up letter.

The information provided by the submitter is not sufficient to permit an EPA evaluation of the study or its results. In all cases, EPA desires a complete description of experimental protocols and results as well as information on the analytical purity and composition of the test material. Without this information, it is not possible to adequately evaluate submitted information.

a) The submitter should be asked to provide a description of the uses of this compound as well as any available information on the presence of 2,3,4,4,4-pentachloro-2-butenoic acid, n-butyl ester residues in any of its products. A full copy of the study's final report and supporting data for points (1) "There is no exposure of the general public..." and (2) "There is limited worker exposure" in the letter should also be provided.

b) The submitter should describe any planned additional testing of this compound.

c) Section 8(b) data should be checked for information on annual production.

d) This submission and status report should be transmitted to NIOSH and OSHA.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: NOV 13 1979

SUBJECT: Status Report 8EHQ-0379-0259 Followup Response

Approved JM 11/19/79

Revision Needed

FROM: Frank D. Kover, Chief
Chemical Hazard Identification Branch

TO: Joseph J. Merenda, Director
Assessment Division, OTE

Submission Description

Per the Agency's request in a follow-up letter to the initial submission (8EHQ-1178-0259), the submitter has provided a copy of the final report on the acute dermal toxicity of 2-butenoic acid, 2,3,4,4,4-pentachloro-, n-butyl ester (BPCC; n-butyl perchlorocrotonate; CAS No. 21824-93-1). Use and exposure data on BPCC were also requested and have been provided in this followup submission. The acute dermal LD_{50} of BPCC is reported to be less than 50 mg/kg (lowest dose tested) when applied undiluted to the intact and abraded skin of rabbits.

Submission Evaluation

BPCC appears to be a potent escharotic (corrosive) agent that is readily absorbed from skin following which it produces severe systemic effects on the central nervous system and probably on heart, blood vessels, liver, kidney and skeletal muscle. The effects are due to depressed function of these internal organs.

The local escharotic effects on skin resemble those of trichloroacetic acid which has been used in medical practice, particularly for removal of warts. Some of the BPCC would be hydrolyzed by esterases from bacteria and fungi normally resident on skin of animals. The resulting perchlorobutenoic acid would probably be more potent than trichloroacetic acid as an escharotic agent.

The systemic effects are most likely due to absorption of the ester that has escaped hydrolysis by skin bacteria. The ester would be expected to have actions resembling those of the chloral hydrate ("knockout drops") class of compounds but much more potent. This class of compounds depresses function of the central nervous system, liver, kidney, heart, blood vessels, and skeletal muscle. The deaths that occcurred within hours after skin application were probably due to either medullary failure of heart or respiration or to direct cardiac poisoning. The deaths that occurred after 24 hours following application of a surprisingly small dose may have been due to any of the above depressant actions or a combination of them.

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*NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

Current Production and Use

A review of the production range (includes importation volumes) statistics for BPCC (CAS No. 21824-93-1) as listed in the initial TSCA Inventory (1977) has shown that no 1977 production/importation was reported or that all of the production range data reported was claimed as confidential by the manufacturer(s) and importer(s) and cannot be disclosed (Section 14(a) of the TSCA, U.S.C. 2613 (a)). The data submitted for the TSCA Inventory including production range information, are subject to the limitations contained in the Inventory Reporting Regulations (40 CFR 710).

The submitter states that BPCC is a catalyst extender used in the production of ethylene propylene diene terpolymer (EPDM rubber). EPDM rubber is then used in the production of consumer products, mainly in the automotive industry (e.g. hoses and tire sidewalls). The submission also reports that BPCC is used in only 12-15% of the EPDM rubber produced domestically and that EPDM rubber represents only about 6% of the total synthetic rubber market.

Comments/Recommendations

The submitter, in response to a followup question asked by the Agency, has reported that chemical analyses on several EPDM rubber samples and residual solids collected after solvent extraction of EPDM rubber indicated no traces of BPCC. This result is reported by the submitter to have been confirmed in similar analyses performed by a domestic customer.

(a) A copy of the original submission (8EHQ-1178-0259), the followup submission (8EHQ-0379-0259 Followup Response), and the respective status reports should be transmitted to NIOSH, OSHA, and CPSC.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF TOXIC SUBSTANCES

APR 0 9 1979

MEMORANDUM

SUBJECT: Status Report 8EHQ-1178-0260

FROM : Walter W. Kovalick, Jr., Director
Program Integration Division (TS-793)

TO : Joseph J. Merenda, Director
Assessment Division (TS-792)

THRU : Marilyn C. Bracken, DAA
Program Integration and Information (TS-793)

Submission Description

Near Beggs, Oklahoma, Natural gas pipeline explosion and fire

On October 30, 1978, a pipe carrying natural gas blew out. The leaking gas was ignited by a passing pick-up truck that was also destroyed, resulting in the death of two persons. Nearby buildings and approximately 30 acres of trees and grass were destroyed. The EPA Region VI office and DOT were notified, and subsequently DOT and OSHA representatives were dispatched to the site.

Submission Evaluation

The incident does not appear to warrant reporting as a substantial risk. As outlined in the March 16 Policy Statement, emergency incidents of environmental contamination are to be reported if the chemical substance or mixture involved presents adverse human health effects or environmental effects which because of "the pattern, extent, and amount of contamination 1) seriously threatens humans with cancer, birth defects, mutation, death, or serious or prolonged incapacitation, or 2) large-scale or ecologically significant population destruction." Due to the nature of the material involved and the resultant short-term effects of the fire, there is no indication that adverse health or environmental effects (aside from those deaths and damage caused by the fire) will occur.

Comments/Recommendation

This submission should be noted as an example of the type of information not required for submission under Section 8(e) emergency incidents of environmental contamination. The notifier should be sent a copy of this status report.

NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA under Section 8(e) of TSCA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: MAR 2 3 1979

SUBJECT: Status Report* 8EHQ-1178-0261

Approved JM 3/23/79

Revision Needed ______________

FROM: Frank D. Kover
Assessment Division, OTE/OTS

TO: Joseph J. Merenda, Director
Assessment Division, OTE/OTS

Submission Description

This is a preliminary report on the acute inhalation toxicity of tertiary-octyl mercaptan (2,4,4-trimethyl-2-pentanethiol) in rats. It is reported that tertiary-octyl mercaptan is significantly more toxic to female rats than to male rats. The submission also indicates that use of an unspecified product containing tertiary-octyl mercaptan residues may release potentially hazardous concentrations of the material.

Submission Evaluation

It is reported that chemically uncharacterized vapors (presumably containing tertiary-octyl mercaptan) released upon heating and air stripping the product in question were more toxic to female rats than to male rats. Exposure to 0.74 mg/l of tertiary-octyl mercaptan (or the analytically uncharacterized air stripped material, the submission is not clear on this point) for one hour resulted in death of 2/5 male rats while the same exposure resulted in 5/5 deaths in female rats. A one-hour exposure to 0.50 mg/l resulted in 4/5 deaths in female rats while no fatalities were observed in male rats at doses below 0.74 mg/l. Death in 4/5 animals at 0.5 mg/l indicates that the material given off by the heated product is highly toxic. However, without a full description of the study protocols and chemical analyses of the vapors to which the animals were exposed, it is not possible to conclude that tertiary-octyl mercaptan was the causative agent.

There are no statistics performed on the submitted data and it is difficult to have an intuitive feel for significance from such a small sample size. More importantly, no mention is made of the differences in weight and respiratory rate between female and male rats. Without these data and statistical testing it is impossible to decide whether the released vapors are more toxic to female rats than to male rats. The submitter notes that additional information on the study will be provided in the future.

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Current Production and Use

Tertiary-octyl mercaptan is reportedly produced by two companies in the United States.

Tertiary-octyl mercaptan is used to control the extent of polymerization during the production of synthetic rubber and rubber-like polymers. Annual production volume is not known.

Comments/Recommendations

Tertiary-octyl mercaptan is relatively volatile at room temperature. Vapor phase toxicology studies with the source at room temperature (250°C) may detect some additional hazard.

The major deficiency in this submission concerns the uncertain analytical composition of the "released vapors." The submitter apparently assumes (or perhaps knows) that tertiary-octyl mercaptan is the major toxic component in the vapors. This point, however, is not demonstrated.

The final toxicological study may show that female rats are more sensitive to the released vapors than male rats; however, the submitter should attempt to determine that the females greater sensitivity is "real" and not merely "apparent." The submitter should consider factors such as differences in weight, respiratory rate, respiratory volume, etc., before concluding that there are sex-related differences in the lethality of the vapors. If the conclusion is nonetheless supported, the toxicological basis for the difference (if discernible) would be of much interest.

a) In view of the reported high toxicity of the test vapors, this preliminary submission and status report should be transmitted to NIOSH, OSHA, and CPSC.

b) The submitter should be requested to provide the analytical composition of the test vapors. This is essential for determining if the toxicity is due to tertiary-octyl mercaptan alone or some mixture of toxics characteristic of the product treated.

c) The submitter should be requested to provide a description of the types of products believed to contain tertiary-octyl mercaptan residues and the uses of those products. Information on the concentration of unreacted tertiary-octyl mercaptan in the final products and the rate and potential conditions of release should be provided to the extent known. The submitter should be asked to describe any additional studies in progress or planned concerning the hazards of tertiary-octyl mercaptan or products containing residues of the substance.

d) Section 8(b) information should be checked to determine the manufacturers and the annual production of tertiary-octyl mercaptan. The manufacturers should be provided a copy of this submission and status report and requested to provide any information in their possession relevant to further evaluating this potential hazard.

e) A revised status report should be prepared based on the information obtained from the above requests and the final report from the submitter.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: AUG 0 3 [illegible]

SUBJECT: Status Report* 8EHQ-0579-0261
Supplement

Approved JM 9/21/79

Revision Needed

FROM: Frank D. Kover, Acting Chief
Chemical Hazard Identification Branch

TO: Joseph J. Merenda, Director
Assessment Division

Submission Description

The submission contains the final report of the acute inhalation toxicities observed in rats exposed to tertiary-octyl mercaptan (CAS No. 141-59-3) vapors evolving from products containing that chemical, or vapors from a commercial tertiary-octyl mercaptan. The submitter states that this information describes the significant differences in the toxicities observed for female and male rats.

The final report is supplemental to a previous submission (8EHQ-1178-0261) in which the submitter reported, based on preliminary information, that tertiary-octyl mercaptan was significantly more toxic to female rats than to male rats as measured by this short-term inhalation exposure study.

Submission Evaluation

It is reasonable to conclude that tertiary-octyl mercaptan (t-octyl SH) and its isomer, rather than di- and tri-sulfide, are responsible for the observed toxicities. The LC_{50} appears to be directly related to the amount of tertiary-octyl mercaptan in the sample. However, this does not account for the observation that the 100% t-octyl SH sample was less toxic than the product containing 1.2% t-octyl SH and not much more toxic than the product containing .37% t-octyl SH. Female rats are approximately twice as sensitive as the males to the toxicity of the finished products and approximately three times as sensitive to the toxicity of the 100% t-octyl SH sample. Something in addition to the mercaptans may be contributing to the toxicity. The two to three fold greater toxicity in the female rats may have been due to differences in biotransformation in addition to a difference in body weight.

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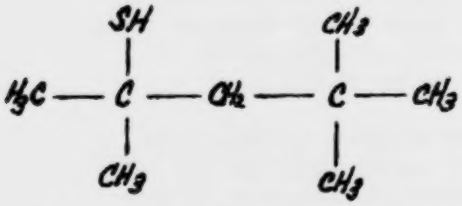
The type of exitus and the sharp dose/response activity suggest a respiratory or cardiac death. The lungs had only moderate acute injury. The color of the blood, which would indicate changes in the hemoglobin, was not recorded. H_2S and mercaptans can affect respiration via the carotid sinus and the medullary center resulting in respiratory paralysis. At the cellular level, mercaptans may depress respiration directly. Mercaptans can also stimulate the convulsive centers in the spinal cord.



$H_3C-\underset{CH_3}{\overset{SH}{C}}-CH_2-\underset{CH_3}{\overset{CH_3}{C}}-CH_3$

2,4,4-trimethyl-2-pentane thiol
Tertiary-Octyl Mercaptan
(CAS No. 141-59-3)

Current Production and Use

Tertiary-octyl mercaptan is used to control the extent of polymerization during the production of synthetic rubber and rubber-like polymers. The submitter reports that this chemical is a component of a product used in lubricants (as a corrosion inhibitor) and in gasoline and jet fuels to counteract corrosiveness caused by the natural sulfur content of those fuels.

Comments/Recommendations

This submission and status report should be transmitted to DOE, DOT, NIOSH, OSHA, CPSC, OWWM, and OAQPS.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: JAN 29 1979

BJECT: Status Report* 8EHQ-1278-0262

Approved JM 2/1/79

Revision Needed

FROM: Frank D. Kover
Assessment Division, OTE/OTS

TO: Joseph J. Merenda, Director
Assessment Division, OTE/OTS

Submission Description

The submission consists of preliminary results of a life-time skin painting study of 2-ethylhexyl acrylate (CAS No. 103-11-7) in mice. The letter reports that after 21 months of treatment, 31/40 mice have died, of which 3 were observed to have a squamous cell papilloma in the treated area. The submitter concludes that these results are an indication of weak, tumorigenic activity in mice.

Submission Evaluation

The shortcoming of this study is the failure to conduct histological examinations of the skin in all treated animals. The sites of application may show significant cellular changes. (This is the same deficiency that was encountered in the study reported in submission 8EHQ-1077-0012 concerning the results of life-time skin painting with N-nitrosomorpholine-contaminated hydraulic fluids.) The submitter's argument that 2-ethylhexyl acrylate has been in use for over 20 years and has not resulted in known chronic toxic effects is not valid. The same argument was used for vinyl chloride and acrylonitrile.

Current Production and Use

Annual production of 2-ethylhexyl acrylate was reported to be greater than 44 million pounds in 1976. The chemical is used as a monomer for plastics, protective coatings, and in paper treatment. It is also used in water-based paints.

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Comments/Recommendations

a) Consideration should be given to the preparation of a Chemical Hazard Information Profile on 2-ethylhexyl acrylate.

b) Prior to EPA's receipt of the final report, the submitter should be asked to describe in more detail the extent of the histopathological examinations conducted on animal tissues, especially skin sections.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: JAN 1 9 1979

SUBJECT: Status Report* 8EHQ-1278-0263

Approved ____________

Revision Needed ____________

FROM: Frank D. Kover
Assessment Division, OTE/OTS

TO: Joseph J. Merenda, Director
Assessment Division, OTE/OTS

Submission Description

The acute, dermal toxicity of acetylenedicarboxylic acid, monopotassium salt in guinea pigs is reported. The LD_{50} is between 25 and 50 mg/kg.

Submission Evaluation

The contact period for the dermal study is not described. The dermal LD_{50} in guinea pigs is similar to that previously found for intraperitoneal administration in mice (also reported in the submission). It is surprising that a dicarboxylic acid so readily penetrates the skin.

Current Production and Use

Acetylene dicarboxylic acid, monopotassium salt is manufactured by two U.S. companies and is apparently sold by a subsidiary of the submitter in only very small amounts (less than 3 kg/year) presumably for laboratory use.

Comments/Recommendations

The March 16, 1978, "Statement of Interpretation and Enforcement Policy" (43 FR 11110) states in Part V that a "substantial risk of injury to health or the environment" is a "risk of considerable concern because of (a) the seriousness of the effect...and (b) the fact or probability of its occurrence." In the present case, while the chemical exhibits a high degree of acute lethality in a dermal study, it is apparently produced in very limited quantities for use in research.

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Thus, the 2 factors to be considered when deciding if submission is required have not been met. Therefore, submission of these data would not be required under Section 8(e). The only other factor to be considered when evaluating the results of routine (LD_{50}) testing is discussed in Comment 14 (Appendix B of the policy statement) as follows: "many routine tests are based on knowledge of the toxicity associated with a chemical; unknown effects occurring during such a range test may have to be reported if they are those of concern to the Agency and if the information meets the criteria set forth in Parts V and VI." Accordingly, observations of "unknown effects" may in some cases assist the potential submitter in deciding if notification is indicated.

a) This submission and status report should be transmitted to NIOSH for possible inclusion in the RTECS.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: MAR [illegible] 1979

SUBJECT: Status Report* 8EHQ-1278-0264

Approved JM 5/28/79

Revision Needed ______

FROM: Frank D. Kover
Assessment Division, OTE/OTS

TO: Joseph J. Merenda, Director
Assessment Division, OTE/OTS

Submission Description

The submission reports the results of studies conducted by the U.S.D.A. indicating that the use of dimethylamine sulfate (DMAS) as a dehairing agent in tanneries contributed to the formation of N-nitrosodimethylamine (NDMA; a known carcinogen) in the tannery atmosphere.

Submission Evaluation

The U.S.D.A. report concluded that DMAS liberated dimethylamine which reacted with an unknown nitrosating agent to form NDMA. The submitter cites a NIOSH-sponsored study which showed that the concentrations of NDMA found in tannery air could not be explained by in situ NDMA contamination of DMAS; the NIOSH study could not, however, identify the source of the detected nitrosamines. The U.S.D.A. report may partially resolve this question, although the details of the NDMA-formation reaction are not yet understood. It is not clear to what extent this uncharacterized reaction might contribute to nitrosamine formation in other occupational or environmental situations.

Current Production and Use

DMAS is used as an accelerator for the dehairing of skins and hides with lime, especially in the production of fine-grained leathers. Its mild action on hair is valuable when the tanner wants to save the hair.

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EPA FORM 1320-6 (REV. 3-76)

Comments/Recommendations

a) This submission and status report should be transmitted to NIOSH, OSHA, CPSC, NCI, and OAQPS.

b) The submitter should be asked to describe any uses of DMAS not involving the dehairing of animal skins.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: JUN 20 1979

SUBJECT: Status Report* 8EHQ-0179-0267

FROM: Frank D. Kover
Assessment Division, OTE/OTS

TO: Joseph J. Merenda, Director
Assessment Division, OTE/OTS

Approved JM 7/28/79

Revision Needed ____________

Submission Description

The submission consists of the results of two dominant lethal assays on 1,1,1-trifluoro-2-chloroethane conducted in mice by inhalation. The first study found that the number of successful fertilizations was reduced at exposure levels of 10,000 and 20,000 ppm; however, the fertilizations were unaffected at the 1,000 ppm level when compared with an unexposed control group. The second study confirmed the reduced fertility observed in the initial study and domonstrated that 1,1,1-trifluoro-2-chloroethane caused a true sperm effect in the male mice. Reduced fertility occurred in both exposure groups (10,000 and 2500 ppm) and was also accompanied by high cumulative mortality (34% and 27% at the high and low dosages, respectively), reduced testicular weight, a slight increase in the number of animals with reduced sperm counts, and a slight increase in the percentage of abnormal sperm. Histological examination of the testes revealed direct toxic effects on the germinal epithelium.

The submission also includes a summary of data from a communication received by the Agency dated August 31, 1977 as information relating to EPA's investigation of chlorofluorocarbons. The summary states that 1,1,1-trifluoro-2-chloroethane is not mutagenic to bacteria in the Ames Test, but has been shown to be feototoxic in rats at levels of 5000 ppm but not at 500 ppm.

Submission Evaluation

Evidence is accumulating that polyhalogenated simple alkanes can adversely affect the development of sperm.

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Reducing the exposure level of the test compound by 75% (from 10,000 to 2500 ppm) resulted in an 8% reduction in mortality. This suggests that the dose-response curve could be flat and that toxic effects would occur below 2500 ppm, possibly even at 100 ppm.

The submitter reports that "normal exposure levels of 1,1,1-trifluoro-2-chloroethane measured in our facility are less than 2 ppm personnel exposure." Extrapolation from the data reported in this submission suggests that exposure of workers to 2-4 ppm is not likely to cause testicular effects.

The submitter should be requested to provide full copies of the final reports on the dominant lethal assays.

Current Production and Use

The submitter reports that the present commercial usage of 1,1,1-trifluoro-2-chloroethane is as a chemical intermediate. No other information on production or uses was located.

Comment/Recommendations

a) This submission and status report should be transmitted to CAD, OSHA, and NIOSH.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: March 19, 1979

SUBJECT: Status Report* 8EHQ-0179-0269S

Approved __________

Revision Needed __________

FROM: Frank D. Kover
Assessment Division, OTE/OTS

TO: Joseph J. Merenda, Director
Assessment Division, OTE/OTS

Submission Description

A copolymer of styrene and alpha-methylstyrene, was found to exhibit estrogenic action in immature intact rats and dogs when fed continuously in the diets of both species for a period of 90 days. The ratio of styrene to alpha-methylstyrene is being held as confidential by the submitter.

Submission Evaluation

The important fact in this submission is that this copolymer has estrogenic action. The "mildness" of the observed estrogenic action could mislead one into the assumption that the product is not likely to cause adverse effects on health. While this assumption may be valid for those effects which occur after short exposure to large amounts of the material, the assumption cannot apply without further study to the possible effects of prolonged exposure to low levels of weakly potent estrogenic compounds. For example, the birth control pill, even with its minimal dose of estrogen, increases the chances for metabolic diseases, hypertension, and diseases of blood clotting. Estrogens can also interfere with function of the pituitary gland. Potent estrogens taken for short periods (5 years) are thought to contribute to the development of breast and uterine cancers. It remains to be established that exposure over longer periods to compounds having weaker estrogenic activity cannot cause these effects. No one has established a no-effect exposure level for estrogens.

The LaWall and Harrison report of October 22, 1946 does not identify the styrene polymer that was studied. The percentage of low molecular weight stilbene-type polymers in the test material is critical. The 1964 Kettering report supports this. What range of variation in styrene polymer molecular weight did the submitter study? The failure of the NCI study to observe gonadotrophic action by styrene is not relevant since estrogenic and pituitary actions are related to the stilbene structure.

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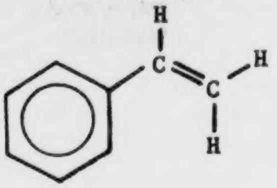
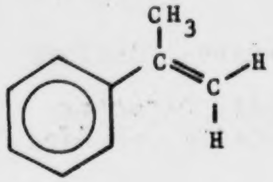
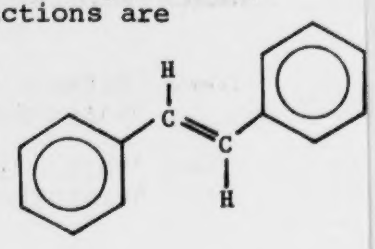


Styrene monomer



alpha-methylstyrene monomer



Stilbene structure

Current Production and Use

Information on production volumes and uses of this copolymer was not located.

Comments/Recommendations

A previous submission reported observations of estrogenic activity in structurally similar materials (polystyrene waste streams, 8EHQ-1078-0245). Another submission (8EHQ-0678-0202) reported that polyethylated benzene tails were carcinogenic in a mouse skin painting study. A contractor-prepared hazard assessment on styrene and ethyl benzene is available from the Assessment Division.

a) The submitter should be asked to describe the uses of this copolymer and to describe the disposition of any waste streams resulting from its production.

b) This submission and status report should be transmitted to OAQPS, ORD, OWWM, OSHA, NIOSH, CPSC, and FDA.

c) The finding that various styrene compounds have estrogenic activity should be investigated in more detail by CHIB to determine the need for a CHIP assessment.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: MAY 31 1979

SUBJECT: Status Report* 8EHQ-0179-0270

Approved JM 7/20/79

Revision Needed ____________

FROM: Frank D. Kover
Assessment Division, OTE/OTS

TO: Joseph J. Merenda, Director
Assessment Division, OTE/OTS

Submission Description

The submission presents the results of a battery of Ames tests conducted on glycidyl acrylate (GA) and glycidyl methacrylate (GMA).

Submission Evaluation

The Ames *Salmonella* gene mutation test with microsomal activation (Ames test) measures the capacity of a chemical and/or its metabolite to induce gene mutations in the bacterium *Salmonella* typhimurium. This system can detect both base pair changes and small deletions and additions in the DNA of the bacterium. There is a good qualitative correlation between positive Ames test results and positive animal oncogenicity test results when the same chemical is studied. Quantitative extrapolations from the Ames test, however, are presently not valid.

The study indicates that both GA and GMA are direct acting mutagens and that they can also be metabolized to an active mutagen in bacteria. A positive Ames test indicates that the chemical and/or its metabolite is mutagenically active in a bacterium. This raises concern that the chemical might be a mutagen or an oncogen in mammals.

Current Production and Use

Acrylic acid esters are used in the manufacture of acrylic resins which are thermoplastic polymers or copolymers of various materials. Annual production figures are not available for GA and GMA. The SRI International Directory of Chemical Producers lists several producers of these compounds; the submtter, however, is not included in the SRI International listing.

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In his submission, the submitter reports that the materials are used by manufacturers and processors in a variety of applications, primarily as a polymerizing agent. The submitting company reports that, partly because of the positive Ames test results, it has decided to discontinue the manufacture of both of these materials, effective immediately.

Comments/Recommendations

The recent submissions have reported preliminary results from lifetime studies of two acrylate esters: ethyl acrylate (8EHQ-1078-0250) and 2-ethylhexyl acrylate (8EHQ-1278-0262).

GA and GMA are both members of the category "Glycidol and Its Derivatives" recommended for section 4 test rules by the ITC. This recommendation is under consideration by the TRDB.

(a) CHIB should request TRDB to consider the information contained in this submission in the light of currently available GA and GMA effects and exposure data. TRDB should then recommend whether section 4(f) priority assessment is warranted.

(b) This submission and status report should be transmitted to NIOSH, OSHA, CPSC, and NCI.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: 3/19/79

SUBJECT: Status Report* 8EHQ-0179-0271

Approved JJM 4/12/79

Revision Needed

FROM: Frank D. Kover
Assessment Division, OTE/OTS

TO: Joseph J. Merenda, Director
Assessment Division, OTE/OTS

Submission Description

This submission presents the results of acute toxicity testing of N,N-diethyl-4-(1H-1,2,4-triazol-3-ylazo)benzeneamine in rats. The chemical was found to have an acute oral LD_{50} of 13.2 mg/kg.

Submission Evaluation

This is a highly toxic chemical compound whose structure is somewhat related to that of the carcinogen butter yellow. The dose-response curve indicates little margin of safety between toxic and lethal doses.

The serious weakness of the submission is the failure to report the analytical purity of the material that was tested. The submitter's response to the test results ("TRC would like to note that this test result was obtained on only one batch...") suggests that the purity of the material varies from batch to batch. N,N-diethyl-para-phenylenediamine and aminotriazole are potential biotransformation products of this substance (see below). Both of these compounds are about one tenth as acutely toxic as the parent material. The greater toxicity is therefore due either to a potent impurity or to the unmetabolized parent compound.

The orange colored urine following oral administration of the orange colored parent compound suggests that the dye is absorbed and excreted in part by the kidneys as unmetabolized dye. The absorption and excretion are dose-related in that the color appeared sooner and was more intense in the urine of rats administered larger doses.

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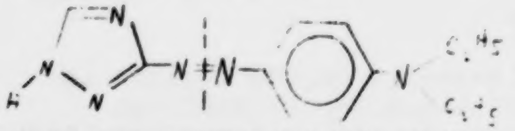
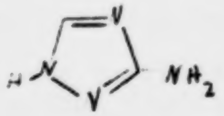
The reports do not include a description of the signs that appeared in the rats shortly before death. Most of the descriptions of organ changes noted at necropsy are not in terms customarily used by pathologists. The delayed appearance of signs of autonomic nervous system stimulation and coma suggests that these are not due to a primary action of the compound but are secondary to the major effect or effects of the material. The latent period to death indicates progressive failure of either heart, blood vessels, kidney, or liver. All of the major organs show stasis of blood and congestion. The bloody nasal discharge (chromorhinorrhea) suggests early involvement of the lungs. The yellow areas of intestine could be due to bile, unabsorbed compound, or to that fraction excreted through the bile.

The failure of 400 times the LD_{50} dose to significantly shorten the time to death is also indicative of slow progressive failure of a vital function. It is not likely due to histamine release because the rat is remarkably resistant to histamine.

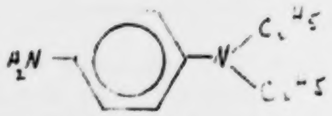
The submission has no data for evaluation of skin and eye irritation studies.



N,N-diethyl-4-(1H-1,2,4-triazol-3-ylazo) benzeneamine



aminotriazole



N,N-diethyl-para-phenylenediamine

Current Production and Use

No information was located in the secondary sources consulted on the production and uses of this material. The submitter notes that the material is used as a chemical intermediate in the form of a wet cake. The submitter's use of the word "internally" in his discussion of the uses of this material can, in the context employed, give rise to misunderstanding.

Comments/Recommendations

a) The submitter should be asked to describe the uses of this material. A description of planned further testing would also be desirable. Copies of the skin and eye irritation studies should be requested.

b) This submission and status report should be transmitted to OSHA and NIOSH.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: JUN 26 1979

SUBJECT: Status Report* 8EHQ-0179-0272

Approved Jm 7/28/79

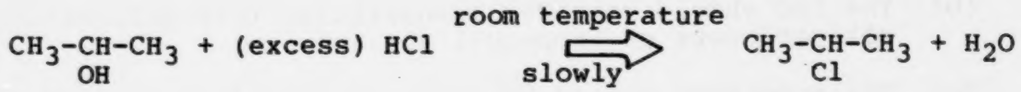
Revision Needed ______

FROM: Frank D. Kover, Acting Chief
Chemical Hazard Identification Branch

TO: Joseph J. Merenda, Director
Assessment Division, OTE/OTS

Submission Description

The submission reports that isopropyl alcohol reacts slowly at room temperature with 20° Baume' hydrochloric acid (concentrated HCl) to form 2-chloropropane.



$$\underset{\text{OH}}{CH_3\text{-}CH\text{-}CH_3} + \text{(excess) } HCl \xrightarrow[\text{slowly}]{\text{room temperature}} \underset{\text{Cl}}{CH_3\text{-}CH\text{-}CH_3} + H_2O$$

Submission Evaluation

2-Chloropropane has marked reactions on the central nervous system (which it depresses) and on the heart (where it can induce serious and fatal irregularities). It is not possible to assess the risks of these hazards without knowing the conditions of exposure.

Current Production and Use

Isopropyl alcohol is widely used as a chemical intermediate and solvent in industry and is also found in many consumer products. The submitter enclosed a reference (Keeney and Frost, J. Petrol. Technol., 27, 552-4, 1975) which reported that isopropyl alcohol, when used during acidic stimulation treatment of oil and gas wells, can react with excess acid to form 2-chloropropane. Acidic stimulation treatment is used to enhance the recovery of gas and, to a lesser extent, oil from

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***NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.**

sandstone and limestone formations. Isopropyl alcohol (or other alcohols) is used as a component of the acid solution to reduce the solution's surface tension and vapor pressure, making it more easily recovered from the well after the acid treatment.

Related Past and Present Activities

A CHIP is available on isopropyl alcohol.

Comments/Recommendations

(a) This submission and status report should be transmitted to NIOSH, OSHA, CPSC, DOE, DOT, OWWM, and FDA.

(b) The IAO should consider transmitting this information to all producers of isopropyl alcohol.

(c) The submitter should be asked to provide any available data on the amount of 2-chloropropane formed during reactions in a closed vessel.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: [illegible]

SUBJECT: Status Report*8EHQ-0179-0273

Approved JM 4/7/79

Revision Needed

FROM: Frank D. Kover
Assessment Division, OTE/OTS

TO: Joseph J. Merenda, Director
Assessment Division, OTE/OTS

Submission Description

Report of an employee fatality which occurred in 1961 following dermal exposure to 1-hexyn-3-ol. Following the incident, the submitter conducted toxicity studies on the compound and claimed to have found the material to be significantly more toxic when absorbed through the skin than when swallowed.

The submitter apparently encountered this report during the course of a recent literature review and, upon due consideration, submitted the information under section 8(e).

Submission Evaluation

This belated submission reports a human fatality following skin absorption. The report relates that death was apparently due to kidney failure; this raises the possibility that 1-hexyn-3-ol is converted to a glycol *in vivo* with subsequent damage to the kidney tubules.

The limited animal data provided do not establish that skin absorption is more lethal than intestinal absorption. What did autopsy of the rats and rabbits show on microscopic examination?

Pharmacokinetic and biotransformation studies are in order.

Current Production and Use

1-Hexyn-3-ol is used as a corrosion inhibitor against mineral acids and as a high temperature oil well-acidizing inhibitor. No production figures are available.

Recommendations Transmit submission and status report to NIOSH and OSHA.

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE:

SUBJECT: Status Report* 8EHQ-0279-0274

Approved 1/24/79

Revision Needed

FROM: Frank D. Kover
Assessment Division, OTE/OTS

TO: Joseph J. Merenda, Director
Assessment Division, OTE/OTS

Submission Description

Results of a chronic inhalation study of phenyl glycidyl ether (PGE) in rats (100/sex/level) at exposure levels of 0, 1, and 12 ppm. After approximately 20 months of exposure malignant nasal tumors were found in two rats exposed to 12 ppm. The submitter notes that this type of tumor is rare, therefore, the finding is statistically significant when compared to historical controls.

Submission Evaluation

Cancer is a hazard of exposure to epoxy compounds. It is conceivable that substituents on the epoxy molecule are a determinant in the reactivity of the epoxy group with macromolecules in tissues. On the basis of this (preliminary ?) report, PGE presents a risk of cancer of at least 1% for rats exposed chronically to 12 ppm (OSHA TWA equals 10 ppm).

The failure to obtain a 4-hour LC_{50} in rats exposed to saturated vapor levels has little relevance for chronic exposure to PGE. Other duPont studies show serious subacute and subchronic effects in rats exposed to concentrations of 5-29 ppm. Examination by our pathologist of the slides prepared from rats exposed for 14 days to 29 ppm is in order.

Current Production and Use

PGE is used as a reactive diluent in uncured epoxy resins to reduce their viscosity. Annual production is reportedly greater than 1,000 lbs.

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Comments/Recommendations

a) This submission and status report should be transmitted to OWWM, OE, and OAQPS. The submitter has already sent copies to NIOSH, OSHA, and NCI.

b) PGE should be considered for a priority assessment and as a potential section 4(f) candidate.

c) A full copy of the final report on the lifetime study should be requested.

d) Arrangements should be made with the submitter for an EPA pathologist to view the slides from the 14-day study.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: [illegible] 2 8 [illegible]

SUBJECT: Status Report* 8EHQ-0279-0275

Approved JM 1/29/80

Revision Needed ____________

FROM: Frank D. Kover, Acting Chief
Chemical Hazard Identification Branch

TO: Joseph J. Merenda, Director
Assessment Division

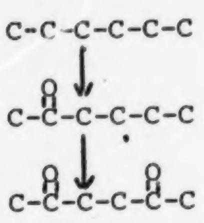
Submission Description

The submission reports that chronic administration of MHK Solvent (5-methyl-2-octanone; 72% minimum) to rats by gavage over a 90-day period induced signs of hind-limb weakness in several of the test animals. Histologic examination of peripheral and central nervous system sections revealed giant axonal neuropathy in the MHK Solvent-dosed rats.

Submission Evaluation

MHK Solvent contains several C_6-C_{10} alkanes and ketones which could be oxidized in vivo to diketones structurely analogous to the 2,5-hexanedione metabolite (a known neurotoxin) of n-hexane. This could account for the neurotoxicity observed in the rats after the oral administration of MHK solvent. The oxidation to analogous diketones might be similar to the metabolic pathway proposed (see below) for the conversion of n-hexane to its ketone and diketone derivatives, methyl n-butyl ketone (2-hexanone) and 2,5-hexanedione, respectively.

PROPOSED OXIDATIVE METABOLIC PATHWAY FOR n-HEXANE*(hydrogens omitted



n-Hexane (known neurotoxin)

Methyl n-butyl ketone (known neurotoxin)

2,5-Hexanedione (known neurotoxin)

* adapted from the 1977 NIOSH Criteria Document C_5-C_8 Alkanes DHEW (NIOSH) Publication No. 77-151

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Current Production and Use

No information on MHK Solvent was located in the secondary literature consulted. The submitter reported that 1978 sales were approximately 1.5 million pounds, and 1979 sales are projected at less than 900,000 pounds. The submitter noted that, based on marketing considerations, a decision has been made that manufacture and sale of MHK Solvent would be discontinued by the end of 1979.

Comments/Recommendations

a) This submission and status report should be transmitted to NIOSH, OSHA, CPSC, and OAQPS.

b) Inventory production data should be checked for this chemical. If other producers are in evidence and if annual production is significant, consideration should be given to the preparation of a Chemical Hazard Information Profile on MHK Solvent.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

SEP 21 1979

OFFICE OF TOXIC SUBSTANCES

MEMORANDUM

SUBJECT: Status Report 8EHQ-0379-0277

FROM: Walter W. Kovalick, Jr., Director
Program Integration Division (TS-793)

Walter W. Kovalick

TO: Joseph J. Merenda, Director
Assessment Division (TS-792)

Submission Description: Sweeny Refinery, Sweeny, Texas Release of Benzene

On February 21, 1979, a backhoe operator -- hired under a contract with Phillips Petroleum Company -- punctured a benzene pipeline on refinery property. It was estimated that approximately 275 barrels of liquid benzene leaked from the punctured line into a trench being dug. That same day, approximately 195 barrels of benzene were recovered from the trench; the benzene was covered by foam and removed by vacuum truck. The incident was reported to the local sheriff and the EPA Region VI office on February 22. EPA then contacted the Coast Guard who did not follow up on the incident because the leak was confined to refinery property.

Submission Evaluation

Chronic exposure to benzene can produce a variety of disease conditions, including aplastic anemia and several different types of cancers. Of concern in this particular incident are possible acute or short-term effects of benzene exposure, such as headaches, diarrhea and burning in the eyes, nose and mouth. No such symptoms were, however, reported.

Exposure to benzene can also cause changes in the blood. Therefore, all employees potentially exposed to benzene were given urinary phenol and blood tests. Two persons were found to have elevated urinary phenols; the results of hematological studies were normal. Follow-up lab work was initiated one month after the exposure to benzene, for the two people with elevated urinary phenols. The full blood count, including platelets, was normal for both individuals. One person, an employee of Phillips, was also given a urinary phenol which was found to be normal. The other individual, an employee of the contractor, was not, however, given a urinary phenol. The results of this follow up lab work has been summarized and sent to EPA from Phillips Petroleum, following a request for data made to the company on August 29th. It is attached, and should be included in the record.

Comments/Recommendations

This incident appears to warrant reporting as an 8(e). Approximately 11,000 gallons of benzene were spilled. Even though approximately 8,000 gallons were cleaned up that same day, the exposure to benzene required careful follow-up. Because the spill was confined to refinery property, no Federal agency (including the Coast Guard and EPA Region VI), recorded or initiated follow-up on the incident. Therefore, it was particularly important for EPA Headquarters to follow-up and maintain a complete record of this incident.

Attachment

cc: A. Edelman (TS-793)
F. Kover (TS-792)
C. Auer/D. Williams (TS-792)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: JUL 13 1979

SUBJECT: Status Report* 8EHQ-0479-0278
and 8EHQ-0479-0279

Approved 7/28/79

Revision
Needed ______

FROM: Frank D. Kover, Acting Chief
Chemical Hazard Identification Branch

TO: Joseph J. Merenda, Director
Assessment Division

Submission Description

The two submissions, 8EHQ-0479-0278 and 8EHQ-0479-0279, are identical with respect to reporting the results of acute toxicity, mutagenicity, and carcinogenicity screening studies using Vat Black 2BN and Vat Black DD Double Pastes/Cakes of which C.I. (Color Index) Vat Green 9 (16-nitroviolanthrone; CAS No. 128-60-9) represents the major portion.

Submission Evaluation

The Ames' Salmonella gene mutation test with activation (Ames' test), measures the capacity of a chemical, and/or its metabolites, to induce gene mutations in the bacterium Salmonella typhimurium. This system can detect both base pair changes and small deletions/additions in the DNA of the bacterium. There is a good qualitative correlation between positive Ames' test results and positive oncogenicity test results when the same chemical is tested. Quantitative extrapolations from the Ames' test are presently not valid. Tested separately, the Vat Black 2BN and DD Double Pastes were very active in the Ames' test both with and without activation. Tested in combination, the DD and 2BN cake sample was found to be mutagenically active in the Mouse Lymphoma Forward Mutation Assay.

The results of the Cell Transformation Test were reported to be negative with regard to a composite sample of the DD and 2BN cakes. However, the submissions did not include complete copies of the protocol and experimental data. Therefore, a full evaluation of the transformation test is not possible at this time.

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Current Production and Use

No current production and use information was located in the secondary sources consulted.

Comments/Recommendations

A positive Ames' test indicates that a chemical, and/or its metabolite, is mutagenically active in a bacterium. This raises a concern that the chemical might be a mutagen or oncogen in mammals. Additionally, the negative results from an in vitro transformation assay are not conclusive that the products (Vat Black 2BN and Vat Black DD Double Pastes/Cakes) are not carcinogenic. The negative results do mean that there is no evidence from this transformation test to indicate that the chemical may have oncogenic potential.

a) The submitter should be requested to send complete copies of the protocol and data from the ICI Cell Transformation Test for further evaluation by the Assessment Division.

b) The submitter should also be requested to provide information relating to the full chemical analyses and uses of these pastes/cakes.

c) Copies of these submissions and status report should be transmitted to NIOSH, OSHA, CPSC, and FDA.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: JUN 14 1979

SUBJECT: Status Report* 8EHQ-0379-0280

Approved JM 7/20/79

Revision Needed ____________

FROM: Frank D. Kover, Acting Chief
Chemical Hazard Identification Branch

TO: Joseph J. Merenda, Director
Assessment Division, OTE/OTS

Submission Description

Report of the death of an employee exposed to trimellitic anhydride (TMA) (CAS # 552-30-7) at a plant conducting pipe-coating operations. The chemical is normally present as a curing agent in the pipe-coating substance. The victim exhibited symptoms which seemed to resemble those previously reported in the scientific literature as being TMA related, although the submitter reports that a previously unreported syndrome of TMA overexposure was observed in the worker.

Submission Evaluation

Trimellitic anhydride can apparently attach itself to carrier proteins in the lungs and thereby act as a haptene to produce antibodies. Such antibodies would react during subsequent exposures to TMA and produce an antigen/antibody reaction complex. The syndrome described in the submission suggests an unusual inability to dispose of this complex, with severe resultant damage to terminal bronchioles and possibly alveoli.

It is also conceivable that the victim's conditions of exposure to TMA permitted free access of TMA to the terminal bronchioles and alveoli, in contrast to the more limited pulmonary access reported in conditions 1, 2, and 3.

Current Production and Use

The estimated production capacity for TMA is 50 million pounds per year. TMA is primarily used in the preparation of resins,

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adhesives, polymers, dyes, pigments, printing inks, surfactants, pharmaceuticals.

TMA is listed in the TSCA Inventory.

Comments/Recommendations

a) Final data on the patient's blood tests should be requested by the Assessment Division.
b) A copy of the submission and status report to be sent to OSHA, CPSC, NIOSH, and FDA.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: OCT 16 1979

SUBJECT: Status Report* 8EHQ-0479-0281

Approved JM 10/18/7

Revision Needed ______________

FROM: Frank D. Kover, Chief
Chemical Hazard Identification Branch

TO: Joseph J. Merenda, Director
Assessment Division, OTE/OTS

Submission Description

Report of the final (24-month sacrifice) histopathological results from a 2-year inhalation study of vinyl bromide (CAS No. 593-60-2) in rats. This study, sponsored by four companies, was designed to investigate the oncogenic potential of vinyl bromide. These final results show an increased incidence of angiosarcomas at all levels of vinyl bromide tested (1235, 247, 52, and 10 parts per million).

The Agency has previously prepared status reports for two earlier submissions (8EHQ-1177-0019 and 8EHQ-0878-0234) which reported the pathology results from the 12-month and 18-month interim sacrifices from this chronic inhalation study of vinyl bromide.

Submission Evaluation

Vinyl bromide appears to be more potent than vinyl chloride in the induction of angiosarcomas. Of special significance is the observation of angiosarcomas in rats exposed to 9.7 ppm of vinyl bromide in air. Since angiosarcomas are not primarily tumors of hepatocytes but of blood vessel connective tissue cells, they can develop in many organs besides the liver. It is significant in the present studies that angiosarcomas were found in lung, spleen, nose, and mesentery. The incidence of true hepatocyte tumors and proliferation of ceruminous gland tumors is also of interest.

It is not clear whether there was an overall increase of brain tumors and why significance was attached only to glioblastoma.

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Current Production and Use

A review of the production range (includes importation volumes) statistics for vinyl bromide (CAS No. 593-60-2) as listed in the initial TSCA Inventory (1977) has shown that no 1977 production/-importation was reported or that all of the production range data reported was claimed as confidential by the manufacturer(s) and importer(s) and cannot be disclosed. (Section 14(a) of the TSCA, U.S.C. 2613 (a)). The data submitted for the TSCA Inventory including production range information, are subject to the limitations contained in the Inventory Reporting Regulations (40 CFR 710). Vinyl bromide is used as an intermediate in organic synthesis and for the preparation of plastics by polymerization and copolymerization. The major use of vinyl bromide is in the production of flame-retardant synthetic fibers. These fibers (used primarily in children's sleepwear and carpets) are produced in a batch polymerization operation with a suspension polymerization medium and a wet spinning process. This method of production would probably preclude residual vinyl bromide monomer in the final product.

Related Past and Present Activities

OTS has had a laboratory investigation underway to detect by chemical analysis, the presence of residual vinyl bromide monomer in carpet, fabric, and fiber samples submitted to EPA by two of the sponsors of the 24 month inhalation study. The results, to date, are negative with respect to the detection of residual vinyl bromide monomer in these samples.

A Chemical Hazard Information Profile (CHIP) document on vinyl bromide has been prepared by the Assessment Division.

Comments/Recommendations

The submitter indicates that levels of vinyl bromide in the workplace are held at or below 1 ppm. The submitter also states that attempts are being made to lower the exposure in the workplace, and that respirators are required when vinyl bromide levels exceed 1 ppm.

a) Vinyl bromide should be considered a candidate for further assessment by the Chemical Review and Evaluation Branch.

b) A copy of the OTS-sponsored chemical analysis protocol and results should be sent to the submitters when that information is received by the Assessment Division.

c) A copy of this submission and status report should be transmitted to NIOSH, OSHA, CPSC, FDA, OWWM, OANR, and CREB.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: [illegible]

SUBJECT: Status Report* 8EHQ-0479-0282S

Approved JM 1/20/80

Revision Needed ______

FROM: Frank D. Kover, Chief
Chemical Hazard Identification Branch

TO: Joseph J. Merenda, Director
Assessment Division, OTE/OTS

Submission Description

Final results of acute dermal toxicity, acute oral toxicity, primary skin irritation, and DOT corrosivity studies of N-(2-chloroethyl)-N-ethyl-m-toluidine (CAS No. 22564-43-8). The results indicate that this chemical has an acute dermal LD_{50} of less than 200 mg/kg (lowest dose tested) for male albino rabbits. The acute oral LD_{50} is reported to be 655 mg/kg in rats.

Submission Evaluation

N-(2-chloroethyl)-N-ethyl-m-toluidine may be considered a half nitrogen mustard and, therefore, very toxic because of its alkylating properties. In addition, it is probably a hematopoietic poison (methemoglobin formation), a liver poison, and a potential carcinogen. Since many aromatic amines are readily absorbed through the skin, it is not surprising that this compound is at least 3 times more toxic when applied to the skin of rabbits than when orally administered to rats. This has been well established in human infants who have been dressed with aniline treated diapers.

N-(2-chloroethyl)-N-ethyl-m-toluidine also has metabolic effects that would be reflected in changes of body temperature.

Current Production and Use

A review of the production range (includes importation volume) statistics for N-(2-chloroethyl)-N-ethyl-m-toluidine (CAS. No. 22564-43-8) which is listed in the initial TSCA Inventory (1977) has shown that no 1977 production/importation was reported or that all of the production range data reported were claimed as confidential by the manufacturer(s) and importer(s) and cannot be disclosed. (Section 14(a) of the TSCA, U.S.C. 2613 (a)). The data submitted for the TSCA Inventory including production range information, are subject to the limitations contained in the Inventory Reporting Regulations (40 CFR 710).

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The submitter reports that N-(2-chloroethyl)-N-ethyl-m-toluidine is currently being manufactured at one of his firm's facilities.

Use information was not located in the secondary literature sources consulted.

Comments/Recommendations

A similar chemical, N-(2-chloroethyl)-N-ethylaniline, was the subject of a previous submission (8EHQ-0578-0169S). The toxicological findings were similar in nature.

The Agency's interest in receipt of acute toxicity studies under section 8(e) of TSCA is, in general, fairly limited. However, under certain circumstances the results of acute studies can provide reasonable support for a conclusion of substantial risk. The guidance offered on this point in the "Statement of Interpretation and Enforcement Policy; Notification of Substantial Risk" (43 FR 11110) can be summarized as follows:

- Part V of the policy statement states that a "substantial risk of injury to health or the environment is a risk of considerable concern because of (a) the seriousness of the effect... and (b) the fact or probability of its occurrence."
- The response to comment 14 indicates that "unknown effects occurring during such a range test [e.g., an acute study] may have to be reported if they are those of concern to the Agency and if the information meets the criteria set forth in Parts V and VI" (emphasis added).

Thus, when evaluating the results of acute animal studies for submission under section 8(e), submitters are expected to consider such factors as the lethal dose, the route of administration, the occurrence of unexpected effects in the animals (obtained via "cage side" observations, during necropsy, and so on), and the extent and pattern of the chemical's exposure (insofar as known to the submitter). In general, when evaluating such information under section 8(e), the greater the acute toxicity of a compound, the less heavily one weighs the exposure criterion, and vice versa.

In the case of the present submission, the acute dermal LD_{50} in male rabbits is less than 200 mg/kg while the acute oral LD_{50} in rats is 655 mg/kg. Furthermore, all rabbits died during the course of primary skin irritation and D.O.T. skin corrosivity tests; unfortunately, no doses (mg/kg) are reported for the two tests. The laboratory report fails to provide any "cage-side" observations or autopsy results (despite the fact that the acute oral and acute dermal protocols specify that the animals will be grossly autopsied). The Agency does not have any use/exposure data on the chemical, other than the fact that it is in production. Given the above described information, a prudent individual would decide to submit the studies to the EPA under section 8(e). This decision is based on the 100% mortality observed in the three rabbit dermal studies. The absence of gross pathology findings does not affect this decision, although the results of such analysis would be of interest to the Agency. (The only factor that could possibly militate against submission in this case is the use/exposure pattern of the chemical. If the material is manufactured, processed, used, and stored in a totally enclosed manner, and if disposal methods also prevented exposure to the chemical, then one could consider not submitting these studies. If, however, the use/exposure pattern of the chemical is uncertain or not available, a prudent individual would, nonetheless, decide to submit these studies under section 8(e).) Thus, in this case, because of the extreme dermal lethality, described only as "less than 200 mg/kg", the submitter was correct in providing these data to the Agency under TSCA section 8(e).

(a) The submitter should be requested to provide, if available, a description of the symptoms exhibited by the animals prior to death as well as the autopsy reports from these acute toxicity studies. The submitter should be asked if there are any plans to determine with more precision the dermal LD_{50}.

(b) The submitter should be requested to provide any available information on exposure to N-(2-chlorothyl)-N-ethyl-m-toluidine, including information on the uses of the chemical.

(c) Further EPA assessment or followup will be considered based upon the nature of any additional information provided by the submitter.

(d) A copy of this submission and status report should be transmitted to OSHA and NIOSH.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: OCT 4 1979

SUBJECT: Status Report* 8EHQ-0579-0283

Approved JM 10/10/79

Revision Needed ______________

FROM: Frank D. Kover, Chief
Chemical Hazard Identification Branch

TO: Joseph J. Merenda, Director
Assessment Division

Submission Description

The submission (on behalf of a wholly owned subsidiary of the submitter) presents a summary of the interim results obtained from an ongoing mouse skin-painting study of a product identified as Wellaid PG-100. The submitter reports that Wellaid PG-100 is a mixture of an epoxy reaction product of polypropylene glycol, a purchased methanol, an aromatic naptha, and a purchased product reported to be a polymerized polyol resin in solution with isopropyl alcohol and diluted with a high-boiling aromatic solvent.

According to this interim report, 13 of 50 mice had developed tumors at the sample application site by the 26th week of this ongoing study. Of the 13 tumors, 11 were still diagnosed as benign, but 2 (although previously diagnosed as benign) had become malignant at weeks 26 and 27.

The submitter states an opinion that the carcinogenic activity of the mixture "is not directly due" to the components manufactured by its subsidiary and reports that it will promptly initiate investigations to insure that the components manufactured by its subsidiary "are not the primary cause of the carcinogenic effect reported."

Submission Evaluation

If the aromatic solvent components of Wellaid PG-100 contain polynuclear hydrocarbons, they would be highly suspect as a carcinogenic factor. However, until carcinogenicity test data on the components of Wellaid PG-100 are available, a conclusion that the observed oncogenic activity is not due

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(either directly or indirectly) to the components produced by the subsidiary company seems inappropriate.

Current Production and Use

The submitter states that Wellaid PG-100 is intended to be used for the separation of crude oil and water, but the product is still in the development stage and its subsidiary company has discontinued the manufacture, distribution, and development work on Wellaid PG-100. According to the submission no Wellaid PG-100 has been shipped to customers in the U.S., but 100 drums were shipped overseas for field trial. No other current production and use information concerning this product was located in the secondary sources consulted.

Comments/Recommendations

a) The submitter should be requested to send full copies of final results of this skin-painting study including test protocols and data and to provide details of the additional investigations being initiated on the components of Wellaid PG-100 manufactured by its subsidiary.

b) The submission and status report should be transmitted to DOE, DOT, OWWM, OSHA, and NIOSH.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: OCT 16 1979

SUBJECT: Status Report* 8EHQ-0579-0284

Approved 10/15/79

Revision Needed ____________

FROM: Frank D. Kover, Chief
Chemical Hazard Information Branch

TO: Joseph J. Merenda, Director
Assessment Division

Submission Description

Preliminary results from a dermal toxicity test in rabbits with ethoxylated C_{12}-C_{15} alcohols containing a boron trifluoride etherate catalyst (CAS No. 109-63-7). The submitter states that the test results appear to clearly support a conclusion that the catalyst or its derivative by reaction is responsible for the high dermal toxicity observed. As a result of this high toxicity, the submitter states that their use of boron trifluoride etherate catalysts has been discontinued in the manufacture of ethoxylated products.

Submission Evaluation

The conclusion that the toxicity observed by the dermal application of the ethoxylated alcohol was due to a boron trifluoride etherate catalyst contamination is probably correct. The ethoxylated C_{12}-C_{15} alcohols would probably behave pharmacologically like the carbitols and spermaceti and would therefore be relatively non-toxic. Boron compounds, however, are significantly toxic. Boron trifluoride is readily absorbed and could produce damage to the lungs, heart, and central nervous system.

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*NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

Current Production and Uses

A review of the production range (includes importation volumes) statistics for boron trifluoride etherate (CAS No. 109-63-7) as listed in the initial TSCA Inventory (1977) has shown that between 0 and 1,000 pounds of this chemical was reported produced/imported in 1977. This production range information does not include any production/importation data claimed as confidential by the person(s) reporting for the TSCA inventory, nor does it include any information which would compromise Confidential Business Information. The data submitted for the TSCA Inventory, including production range information, are subject to the limitations contained in the Inventory Reporting Regulations (40 CFR 710).

The predominant use of boron trifluoride etherate is as a catalyst for polymerizations, alkylations and isomerizations. It can also be used as a chemical intermediate.

Comments/Recommendations

Boron trifluoride is the subject of a NIOSH Criteria Document (Dec. 1976).

(a) The submitter should be requested to provide full copies of the results, including test protocols and data, from this dermal toxicity study.

(b) Copies of this submission and status report should be transmitted to NIOSH, OSHA, FDA, CPSC, and OWWM.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: [illegible] 6 1979

SUBJECT: Status Report* 8EHQ-0579-0285

FROM: Frank D. Kover, Chief
Chemical Hazard Identification Branch

TO: Joseph J. Merenda, Director
Assessment Division

Approved 10/31/79

Revision Needed __________

Submission Description

Preliminary summary report of results from several genotoxic tests with tertiary-butyl glycidyl ether. The submission reports that mutagenic activity was detected in several of the short-term assays. The submitter states that a copy of the full report, upon completion, will be sent to the Agency.

Submission Evaluation

These summarized results do indicate a possible mutagenic potential for t-BGE. However, without complete copies of the test protocols and data, a full evaluation of the preliminary results, as presented, is not possible at this time.

Current Production and Use

A review of the production range (includes importation volumes) statistics for tertiary-butyl glycidyl ether (CAS. No. 7665-72-7) as listed in the initial TSCA Inventory (1977) has shown that between 1,000 to 10,000 pounds of this chemical was reported produced/imported in 1977. This production range information does not include any production/importation data claimed as confidential by the person(s) reporting for the TSCA inventory, nor does it include any information which would compromise Confidential Business Information. The data submitted for the TSCA Inventory, including production range information, are subject to the limitations contained in the Inventory Reporting Regulations (40 CFR 710). The chief use of glycidyl ethers, in general, is as reactive diluents in epoxy resin systems.

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*NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

Comments/Recommendations

Glycidyl ethers have been the subject of several other submissions received and evaluated by the Agency under section 8(e) of TSCA. Phenyl glycidyl ether (PGE) was found to induce nasal tumors in rats at 12 ppm in a two-year inhalation toxicity study (8EHQ-0279-0274); n-butyl glycidyl ether (n-BGE) was found to be genetically active in several short-term mutagenicity assays and to have possible effects on testicular functions in rats (8EHQ-0279-0213); n-alkyl glycidyl ethers with alkyl groups in the C_2-C_{10} range were found to be potential mutagens in a battery of mutagenicity tests and, in additional studies, a mixture of C_8 and C_{10} glycidyl ethers was found to cause testicular lesions in certain animal species at high dose levels by atypical routes of exposure (8EHQ-0779-0293).

The Test Rules Development Branch, in conjunction with the Environmental and Health Review Divisions, is currently reviewing data received by the Agency pertaining to the Interagency Testing Committee designated category: "Glycidol and Its Derivatives."

a) A copy of this submission and status report should be transmitted to TRDB, NIOSH, and OSHA.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: OCT 31 1979

SUBJECT: Status Report* 8EHQ-0579-0286

Approved JM 11/14/79

Revision Needed ______________

FROM: Frank D. Kover, Chief
Chemical Hazard Identification Branch

TO: Joseph J. Merenda, Director
Assessment Division, OTE

Submission Description

The submission presents a summary of the effects of vinyl carbazole (CAS No. 1484-13-5) in several mutagenicity and oncogenicity assays. The submission states that the test results indicate that vinyl carbazole is a potential mutagen and carcinogen.

Submission Evaluation

The summarized results, as presented in this submission, do indicate that vinyl carbazole has both mutagenic and oncogenic potential. However, without complete copies of the test protocols and data, a full evaluation of the submitted results is not possible at this time.

Current Production and Use

A review of the production range (includes importation volumes) statistics for vinyl carbazole (CAS No. 1484-13-5) as listed in the initial TSCA Inventory (1977) has shown that no 1977 production/importation was reported or that all of the production range data reported were claimed as confidential by the manufacturer(s) and importer(s) and cannot be disclosed. (Section 14(a) of the TSCA, U.S.C. 2613 (a)). The data submitted for the TSCA Inventory including production range information, are subject to the limitations contained in the Inventory Reporting Regulations (40 CFR 710).

Vinyl carbazole polymerizes to form insulating and heat-resistant resins somewhat similar to mica with regard to dielectric properties.

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*NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

Comments/Recommendations

(a) The submitter should be requested to provide full copies of the test protocols and data from the studies cited in this submission.

(b) Copies of this submission and status report should be transmitted to OSHA and NIOSH.

(c) The submitter should be requested to provide any available exposure information, particularly as it relates to typical uses of the chemical(s).

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: OCT 31 1979

SUBJECT: Status Report* 8EHQ-0579-0287

Approved JM 11/8/79

Revision Needed ______

FROM: Frank D. Kover, Chief
Chemical Hazard Identification Branch

TO: Joseph J. Merenda, Director
Assessment Division, OTE

Submission Description

The submission presents a summary of the effects of m-Iodotoluene (CAS No. 625-95-6) in several mutagenicity and oncogenicity assays. The submission states that the test results indicate that this chemical is a potential mutagen and carcinogen.

Submission Evaluation

The summarized results, as presented in this submission, do indicate that m-Iodotoluene has both mutagenic and oncogenic potential. However, without complete copies of the test protocols and data, a full evaluation of the submitted results is not possible at this time.

Current Production and Use

A review of the production range (includes importation volumes) statistics for m-Iodotoluene (CAS No. 625-95-6) as listed in the initial TSCA Inventory (1977) has shown that no 1977 production/importation was reported or that all of the production range data reported were claimed as confidential by the manufacturer(s) and importer(s) and cannot be disclosed. (Section 14(a) of the TSCA, U.S.C. 2613 (a)). The data submitted for the TSCA Inventory including production range information, are subject to the limitations contained in the Inventory Reporting Regulations (40 CFR 710).

Current use information for this chemical was not located in the secondary literature sources consulted.

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*NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

Comments/Recommendations

(a) The submitter should be requested to provide full copies of the test protocols and data from the studies cited in this submission.

(b) Copies of this submission and status report should be transmitted to OSHA and NIOSH.

(c) The submitter should be requested to provide any available exposure information, particularly as it relates to typical uses of the chemical(s).

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: OCT 30 1979

SUBJECT: Status Report* 8EHQ-0579-0288

Approved 10/31/79

Revision
Needed ______

FROM: Frank D. Kover, Chief
Chemical Hazard Identification Branch

TO: Joseph J. Merenda, Director
Assessment Division

Submission Description

The submission presents a summary of results from a battery of in vivo and in vitro mutagenicity tests on production grade phosphonitrilic chloride (CAS No. 25034-79-1) which contains a number of $PNCl_2$ polymeric species. The submitter states that the positive effects obtained in a number of the in vitro tests are suggestive that the tested material is a potential mutagen.

Submission Evaluation

The summarized in vitro results, as presented in this submission, do indicate that phosphonitrilic chloride has a mutagenic potential. However, without complete copies of the test protocols and data, a full evaluation of the results is not possible at this time.

Current Production and Use

A review of the production range (includes importation volumes) statistics for phosphonitrilic chloride ($(Cl_2NP)_x$; CAS No. 25034-79-1) as listed in the initial TSCA Inventory (1977) has shown that no 1977 production/importation was reported or that all of the production range data reported was claimed as confidential by the manufacturer(s) and importer(s) and cannot be disclosed. (Section 14(a) of the TSCA, U.S.C. 2613 (a)). The data submitted for the TSCA Inventory including production range information, are subject to the limitations contained in the Inventory Reporting Regulations (40 CFR 710).

The submitter states that this material is, at the present time, a low volume specialty product.

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*NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

Comments/Recommendations

a) The submitter should be requested to provide full copies of the results, including test protocols and data, from the studies cited in this submission.

b) A copy of this submission and status report should be transmitted to OSHA and NIOSH.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: [illegible]

SUBJECT: Status Report* 8EHQ-0579-0289 and
8EHQ-0579-0289 Supplement

Approved JM 1/20/80

Revision
Needed ____________

FROM: Frank D. Kover, Chief
Chemical Hazard Identification Branch,

TO: Joseph J. Merenda, Director
Assessment Division, OTE

Submission Description

The initial submission presents a summary of the effects of Epikote Resin 1002 (4,4'-isopropylidenediphenol-epichlorohydrin resin; also known as a bisphenol A-epichlorohydrin resin) in several in vitro mutagenicity and oncogenicity assays. The initial submission states that the test results indicate that Epikote 1002 Resin is a potential mutagen and potential direct-acting carcinogen.

Additional information on an essentially identical chemical (Epon Resin 1002) was provided to EPA strictly on a "For Your Information" basis by the manufacturer of Epon Resin 1002. This information, which was handled as a supplement to the initial submission, indicated the uses of Epon Resin 1002, provided sales figures (confidential), summarized the results of several mutagenicity assays on a homologous series of such resins, and included a product safety data sheet on Epon Resin 1002. It is this submitter's view that, when all the data are considered, one is "led to a conclusion that the data support a negative, rather than positive result" with respect to the mutagenic response of Epikote/Epon Resin 1002.

Submission Evaluation

The summarized in vitro results, as presented in the initial submission, do indicate that Epikote Resin 1002 has both mutagenic and direct-acting carcinogenic potential. However, without complete copies of the test protocols and data, a full evaluation of the results is not possible at this time.

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*NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

The supplement summarizes the results from a variety of mutagenicity assays on several bisphenol A-epichlorohydrin based epoxy resins ranging from liquids (MW 345) to high melting polymeric solids (MW > 4000). In the results cited, the various Epon resins were reportedly found positive in 5/17 studies and negative in 12/17. No further judgment can be offered, however, in the absence of full copies of the referenced studies.

Following receipt of the requested studies, further evaluation of this class of epoxy resins can proceed. It is of interest in this discussion to note the results from several carcinogenicity assays of bisphenol A-epichlorohydrin based resins (as summarized by Andersen *et al.*). Kotin and Falk (1963) found one skin tumor and three malignant lymphomas in 50 mice exposed to one injection of a bisphenol A-epichlorohydrin condensation product (MW 395). Lifetime skin painting with undiluted resin yielded no tumors in 40 mice; however, none of the animals were alive after 24 months (Weill *et al.*, 1963). Hine *et al.* (1958) reported four malignant sarcomas at the site of injection in a study using 30 rats. In all of these studies, the number of animals on test as well as the duration of the observation period may be inadequate in terms of present day protocols, although malignant tumors were demonstrated in 2 of the studies.

Current Production and Use

A review of the production range (includes importation volumes) statistics for bisphenol A-epichlorohydrin resins (CAS. No. 25068-38-6) which are listed in the initial TSCA Inventory (1977) has shown that between 126 million and 669 million pounds of these resins were produced/imported in 1977.*/

The supplement reported that Epikote/Epon Resin 1002 is specifically used in molding powders (e.g., encapsulation of electrical parts), resin-based adhesive tapes, pressure sensitive dry inks (microencapsulation technique), and stabilizing polypropylene by scavenging catalyst residues. Other bisphenol A-epichlorohydrin based epoxy resins are used as protective coatings, reinforced plastics, bondings and adhesives, flooring and paving and other miscellaneous applications.

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*/This production range information does not include any production/importation data claimed as confidential by the person(s) reporting for the TSCA Inventory, nor does it include any information which would compromise Confidential Business Information. The data submitted for the TSCA Inventory, including production range information, are subject to the limitations contained in the Inventory Reporting Regulations (40 CFR 710).

Comments/Recommendations

The presence of epichlorohydrin in these resins is presumably responsible for the observed genetic activity, although Andersen *et al*. reported that the "mutagenic action of the resins is not caused solely by the possible content of unreacted ECH (epichlorohydrin)...." Quantitative support for this statement is, however, lacking in the Andersen *et al*. paper.

Epichlorohydrin has been the subject of several other submissions: 8EHQ-1177-0016; 8EHQ-0878-0230; 8EHQ-0978-0230 (Supplement).

A Chemical Hazard Information Profile (CHIP) and a draft hazard assessment are available on epichlorohydrin. Epichlorohydrin has also been selected for TSCA section 4 testing considerations by the ITC.

(a) The two submitters should be requested to provide full copies of the test protocols and data from the studies cited in their respective submissions.

(b) This submission and status report should be transmitted to TRDB, CPSC, OSHA, and NIOSH.

(c) CHIB will review the additional data requested, revise this Status Report as appropriate, and recommend further followup assessment if warrented.

REFERENCES

Andersen, M., Kiel, P. Larsen, H., Maxild, J.; *Nature*, Volume *276*, 391-392 (1978)

Hine, C.H., Guzman, R.J., Courey, M.M., Wellington, J.S., Anderson, H.H.; *Cancer Research*, Volume *18*, 20-26 (1958)

Kotin, P., Falk, H.L.; *Radiat. Res. Suppl.*, Volume *3*, 193-211 (1963)

Weil, C.S., Condra, N. Haun, C., Streigel, J.A.; *Am. Ind. Hyg. Assoc. J.*, Volume *24*, 305-325 (1963)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: NOV 1 1979

SUBJECT: Status Report* 8EHQ-0679-0291,
8EHQ-0879-0291 Supplement

Approved JM 11/4/79

Revision
Needed

FROM: Frank D. Kover, Chief FDK
Chemical Hazard Identification Branch

TO: Joseph J. Merenda, Director
Assessment Division, OTE (TS-792)

Submission Description

Summarized final results from several laboratory studies on trimethyl phosphite (TMP; CAS No. 121-45-9). TMP was found positive in several mutagenicity screening assays. In a 4-week inhalation toxicity study in rats, TMP induced severe cataracts at the highest dose tested (600 ppm). The supplemental submission reported that TMP at the highest dose (164mg/kg) produced teratogenic effects when administered by gavage to pregnant rats.

Submission Evaluation

Trimethyl phosphite is an alkylating agent and an anticholinesterase. Its reaction with proteins results in a persistent action which is finally disposed of by the regeneration of a new protein. The cataracts observed in the rats might have been due to an alteration in the lens proteins caused by direct alkylation or by persistent cholinergic stimulation (anticholinesterase activity). Cataracts can, in some cases, occur in patients treated with anticholinesterases for glaucoma.

The teratologic effects of TMP may be due to its anticholinesterase activity. Imbalances in acetylcholine and cholinesterase appear to be involved in teratogenesis, particularly in neural tube defects in apes and humans.

There have been several submissions in which the results of the Ames' test are negative while other mutagenicity test results are positive. There is probably a significant clue here which might merit investigation.

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*NOTE: This status report is the result of a preliminary staff evaluation of information submitted to EPA. Statements made herein are not to be regarded as expressing final Agency policy or intent with respect to this particular chemical. Any review of the status report should take into consideration the fact that it may be based on incomplete information.

Current Production and Use

A review of the production range (includes importation volumes) statistics for trimethyl phosphite (CAS No. 121-45-9) as listed in the initial TSCA Inventory (1977) has shown that between 11 million to 60 million pounds of this chemical were reported produced/imported in 1977. This production range information does not include any production/importation data claimed as confidential by the person(s) reporting for the TSCA inventory, nor does it include any information which would compromise Confidential Business Information. The data submitted for the TSCA Inventory, including production range information, are subject to the limitations contained in the Inventory Reporting Regulations (40 CFR 710).

The submitter states that their only use of trimethyl phosphite is as an intermediate. In general, TMP is used as an intermediate in the manufacture of insecticides. It is not known how much, if any, TMP remains unreacted in final products.

Comments/Recommendations

In order to clarify the potential hazards and risk, the submitter is planning additional toxicology testing of TMP. The submitter states that although no evidence of cataracts has been found in their worker population, opthalmologic examinations will be conducted. The submitter also states that their employees and customers are being notified of the findings reported in these submissions and the plans to conduct further toxicological testing.

(a) The submitter should be requested to provide full copies of the final results, including test protocols and data from the studies cited in their submissions. In addition, the submitter should be requested to describe the end-uses of TMP and to provide available information on the presence of unreacted TMP in final products.

(b) It is recommended that TMP be considered a candidate for the proposed Section 8(a) Level A rule.

(c) Copies of these submissions and status report should be transmitted to NIOSH, OSHA, OPP, and OWWM.

federal register

APPENDIX A

THURSDAY, MARCH 16, 1978

PART V

THE NATIONAL ARCHIVES OF THE UNITED STATES
1934

ENVIRONMENTAL PROTECTION AGENCY

■

TOXIC SUBSTANCES CONTROL ACT

Statement of Interpretation and Enforcement Policy; Notification of Substantial Risk

[6560-01]

ENVIRONMENTAL PROTECTION AGENCY

[FRL 849-2]

TOXIC SUBSTANCES CONTROL ACT

Notification of Substantial Risk Under Section 8(e)

AGENCY: Environmental Protection Agency.

ACTION: Statement of interpretation and enforcement policy.

SUMMARY: This action states EPA's interpretation of, and enforcement policy concerning, section 8(e) of the Toxic Substances Control Act (TSCA) (90 Stat. 2029, 15 U.S.C. 2607). The provisions of that section went into effect on January 1, 1977.

Section 8(e) states that "any person who manufactures, processes, or distributes in commerce a chemical substance or mixture and who obtains information which reasonably supports the conclusion that such substance or mixture presents a substantial risk of injury to health or the environment shall immediately inform the Administrator of such information unless such person has actual knowledge that the Administrator has been adequately informed of such information."

DATES: The policy expressed in this document is in effect as of the date of publication.

FOR FURTHER INFORMATION CONTACT:

Frank D. Kover, Assessment Division, Office of Toxic Substances (WH-557), Environmental Protection Agency, 401 M Street SW., Washington, D.C. 20460, 202-755-2110.

SUPPLEMENTARY INFORMATION: On September 9, 1977, the Agency proposed guidance (42 FR 45362) on its interpretation of and policy concerning the provisions of section 8(e). Although the proposed "guidance" was an interpretive rule and statement of policy exempt from the notice and public comment provisions of the Administrative Procedure Act (5 U.S.C. 553), the Agency solicited comments on several issues to make more informed decisions. On October 11, the comment period was extended from October 15 to October 31, 1977 (42 FR 54857). On November 4, 1977, a supplemental notice to the proposed guidance was published (42 FR 57744), deleting the November 15 date for reporting certain information obtained before 1977 and stating that a new date would be established in the final guidance.

In developing this policy statement, two meetings have been held (February 1, 1977, and October 26, 1977) with selected representatives of industry and environmental and other interested groups. Comments submitted pursuant to the February 1 meeting were addressed in the preamble to the September 9 proposal. Over 100 written comments have been submitted pursuant to the September 9 proposal from trade associations, businesses, environmental groups, labor unions, State and Federal agencies, and other interested parties. Appendix B describes significant issues raised in these comments and the Agency's response to them.

The major modifications to the September 9 proposal are summarized in points 1 through 7 below.

(1) Pursuant to some question over the definition and nature of "guidance," this document is now described more accurately as a "policy statement." It is exempt from the notice and public comment provisions of the Administrative Procedure Act, as well as provisions concerning delayed effective dates.

(2) Many commenters expressed the view that to apply these requirements to officers and employees of a business organization would result in ill-considered, premature reports and would unfairly subject employees to conflicting responsibilities as individual respondents and as corporate agents. Other commenters expressed support for the view that certain employees have a responsibility to report pertinent information, and felt that the phrase "capable of appreciating pertinent information" appropriately described those employees.

The September 9 proposal would have applied section 8(e) requirements to commercial establishments as well as to employees capable of appreciating pertinent information, but stipulated enforcement priorities intended to encourage corporate processing and centralized reporting of such information (42 FR 45363). The intent was to ensure that pertinent information obtained by employees is promptly and appropriately considered, while minimizing duplicative or ill-considered submissions.

The Agency now feels that these objectives would best be served by allowing commercial establishments—under certain conditions designed to ensure full disclosure—to assume exclusive responsibility for reporting to EPA any substantial-risk information obtained by individual officers or employees. Accordingly, this policy statement stipulates that individual officers and employees will have fully discharged their section 8(e) obligations once they have notified the designated responsible company supervisor or official of pertinent information, *provided*, that the employing company or firm has established, internally publicizes, and affirmatively implements procedures governing such notifications. These procedures, at a minimum, must: (1) Specify the information that must be reported; (2) indicate how the notifications are to be prepared and submitted; (3) note the Federal penalties for failing to report; and (4) provide a mechanism for promptly notifying officers and employees who have submitted reports of the company's disposition of those reports, including whether or not they were submitted to EPA (and if not, informing employees of their right to report to EPA, as protected by TSCA section 23). EPA believes these four criteria will ensure prompt and appropriate processing of pertinent information.

Establishment of such procedures notwithstanding, all officials responsible and having authority for the organization's execution of its section 8(e) obligations retain personal liability for ensuring that substantial-risk information is reported to EPA.

(3) The September 9 proposal stated, in Part III, that a person obtains information when he is aware that it "may suggest" substantial risk. Numerous commenters questioned the Administrator's authority to compel the reporting of information which "may suggest" substantial risk. The Administrator agrees that section 8(e) addresses information that "reasonably supports the conclusion" of substantial risk and has deleted the "may suggest" provision, but emphasizes that "reasonably supports the conclusion" of substantial risk is not identical to a conclusive demonstration of substantial risk. The former typically occurs, and must be reported, at an earlier stage. Part VI in this policy statement provides Agency interpretation of the types of information that "reasonably support" such a conclusion.

(4) Numerous commenters requested clarification of different aspects of Part V of the September 9 proposal ("Information Which Reasonably Supports a Conclusion of Substantial Risk"), particularly concerning environmental effects, and suggested different interpretations of what constitutes a "substantial risk". The Agency continues to focus in this policy statement on the effects set forth in the September 9 proposal, but clarifies that the substantiality of a risk is a function of both the seriousness of the effect and the probability of its occurrence (see Part V).

(5) Numerous commenters maintained that section 8(e) only applies prospectively to information obtained after January 1, 1977. The Agency disagrees, as explained in the preamble to the September 9 proposal. This policy statement continues to apply section 8(e) to information obtained before 1977 of which a person has

been aware since January 1, 1977. In response to requests for clarification, the statement defines what constitutes such awareness. In this manner, EPA intends to limit the need for searches of historical records and files.

(6) This policy statement now provides that any information published in scientific literature, in any language, is exempt if it is referred to in abstracts published by specified abstracting services.

(7) This policy statement describes in a new Part X how to submit claims of confidentiality.

Accordingly, the Administrator's interpretation of and policy towards section 8(e) is set forth below.

Dated: February 24, 1978.

Douglas Costle
Administrator.

I. Definitions

The definitions set forth in TSCA section 3 apply to these requirements. In addition, the following definitions are provided for purposes of this policy statement:

The term "manufacture or process 'for commercial purposes' " means to manufacture or process: (1) For distribution in commerce, including for test marketing purposes, (2) for use as a catalyst or an intermediate, (3) for the exclusive use by the manufacturer or processor, or (4) for product research and development.

The term "person" includes any natural person, corporation, firm, company, joint-venture, partnership, sole proprietorship, association, or any other business entity, any State or political subdivision thereof, any municipality, any interstate body and any department, agency, or instrumentality of the Federal Government.

The term "substantial-risk information" means information which reasonably supports the conclusion that a chemical substance or mixture presents a substantial risk of injury to health or the environment.

II. Persons Subject to the Requirement

Persons subject to section 8(e) requirements include both natural persons and business entities engaged in manufacturing, processing, or distributing in commerce a chemical substance or mixture. In the case of business entities, the president, chief executive officer, and any other officers responsible and having authority for the organization's execution of its section 8(e) obligations must ensure that the organization reports substantial-risk information to EPA. The business organization is considered to have obtained any information which any officer or employee capable of appreciating the significance of that information has obtained. It is therefore incumbent upon business organizations to establish procedures for expeditiously processing pertinent information in order to comply with the schedule set forth in Part IV.

Those officers and employees of business organizations who are capable of appreciating the significance of pertinent information are also subject to these reporting requirements. An employing organization may relieve its individual officers and employees of any responsibility for reporting substantial-risk information directly to EPA by establishing, internally publicizing, and affirmatively implementing procedures for employee submission and corporate processing of pertinent information. These procedures, at a minimum, must: (1) Specify the information that officers and employees must submit; (2) indicate how such submissions are to be prepared and the company official to whom they are to be submitted; (3) note the Federal penalties for failing to report; and (4) provide a mechanism for promptly advising officers and employees in writing of the company's disposition of the report, including whether or not the report was submitted to EPA (and if not informing employees of their right to report to EPA, as protected by TSCA section 23). An employee of any company that has established and publicized such procedures, who has internally submitted pertinent information in accordance with them, shall have discharged his section 8(e) obligation. Establishment of such procedures notwithstanding, all officials responsible and having authority for the organization's execution of its section 8(e) obligations retain personal liability for ensuring that the appropriate substantial-risk information is reported to EPA.

Business organizations that do not establish such procedures cannot relieve their individual officers and employees of the responsibility for ensuring that substantial-risk information they obtain is reported to EPA. While officers and employees of such organizations may also elect to submit substantial-risk information to their superiors for corporate processing and reporting, rather than to EPA directly, they have not discharged their individual section 8(e) obligation until EPA has received the information.

Note.—Irrespective of a business organization's decision to establish and publicize the procedures described above, it is responsible for becoming cognizant of any substantial-risk information obtained by its officers and employees, and for ensuring that such information is reported to EPA within 15 working days.

III. When a Person Will Be Regarded as Having Obtained Information

A person obtains substantial-risk information at the time he first comes into possession of or knows of such information.

Note.—This includes information of which a prudent person similarly situated could reasonably be expected to possess or have knowledge.

An establishment obtains information at the time any officer or employee capable of appreciating the significance of such information obtains it.

IV. Requirement That a Person "Immediately Inform" the Administrator

With the exception of information on emergency incidents of environmental contamination [see Part V(c)] a person has "immediately informed" the Administrator if information is received by EPA not later than the 15th working day after the date the person obtained such information. Supplementary information generated after a section 8(e) notification should, if appropriate, be immediately reported. For emergency incidents of environmental contamination, a person shall report the incident to the Administrator by telephone as soon as he has knowledge of the incident (see Part IX for appropriate telephone contacts). The report should contain as much of the information required by Part IX as possible. A written report in accordance with Part IX (a) through (f) is to be submitted within 15 days.

Information currently in the possession of a person who is subject to reporting must be reported within 60 days of publication of this policy statement.

V. What Constitutes Substantial Risks

A "substantial risk of injury to health or the environment" is a risk of considerable concern because of (a) the seriousness of the effect [see Subparts (a), (b), and (c) below for an illustrative list of effects of concern], and (b) the fact or probability of its occurrence. (Economic or social benefits of use, or costs of restricting use, are not to be considered in determining whether a risk is "substantial".) These two criteria are differentially weighted for different types of effects. The human health effects listed in Subpart (a) below, for example, are so serious that relatively little weight is given to exposure; the mere fact the implicated chemical is in commerce constitutes sufficient evidence of exposure. In contrast, the remaining effects listed in Subparts (b) and (c) below must involve, or be accompanied by the potential for, significant levels of exposure (because of general production levels, persistence, typical uses, common means of disposal, or other pertinent factors).

Note that: (i). The effects outlined below should not be reported if the respondent has actual knowledge that the Administrator is already informed of them.

(ii) Information respecting these effects can be obtained either directly, by observation of their occurrence, or inferred from designed studies as discussed in Part VI.

The Agency considers effects for which substantial-risk information must be reported to include the following:

(a) *Human health effects*—(1) Any instance of cancer, birth defects, mutagenicity, death, or serious or prolonged incapacitation, including the loss of or inability to use a normal bodily function with a consequent relatively serious impairment of normal activities, if one (or a few) chemical(s) is strongly implicated.

(2) Any pattern of effects or evidence which reasonably supports the conclusion that the chemical substance or mixture can produce cancer, mutation, birth defects or toxic effects resulting in death, or serious or prolonged incapacitation.

(b) *Environmental effects*—(1) Widespread and previously unsuspected distribution in environmental media, as indicated in studies (excluding materials contained within appropriate disposal facilities).

(2) Pronounced bioaccumulation. Measurements and indicators of pronounced bioaccumulation heretofore unknown to the Administrator (including bioaccumulation in fish beyond 5,000 times water concentration in a 30-day exposure or having an n-octanol/water partition coefficient greater than 25,000) should be reported when coupled with potential for widespread exposure and any non-trivial adverse effect.

(3) Any non-trivial adverse effect, heretofore unknown to the Administrator, associated with a chemical known to have bioaccumulated to a pronounced degree or to be widespread in environmental media.

(4) Ecologically significant changes in species' interrelationships; that is, changes in population behavior, growth, survival, etc. that in turn affect other species' behavior, growth, or survival.

Examples include: (i) Excessive stimulation of primary producers (algae, macrophytes) in aquatic ecosystems, e.g., resulting in nutrient enrichment, or eutrophication, of aquatic ecosystems.

(ii) Interference with critical biogeochemical cycles, such as the nitrogen cycle.

(5) Facile transformation or degradation to a chemical having an unacceptable risk as defined above.

(c) *Emergency incidents of environmental contamination*—Any environmental contamination by a chemical substance or mixture to which any of the above adverse effects has been ascribed and which because of the pattern, extent, and amount of contamination (1) seriously threatens humans with cancer, birth defects, mutation, death, or serious or prolonged incapacitation, or (2) seriously threatens non-human organisms with large-scale or ecologically significant population destruction.

VI. Nature and Sources of Information Which "Reasonably Supports the Conclusion" of Substantial Risk

Information attributing any of the effects described in Part V above to a chemical substance or mixture is to be reported if it is one of the types listed below and if it is not exempt from the reporting requirement by reason of Part VII of this policy statement. A person is not to delay reporting until he obtains conclusive information that a substantial risk exists, but is to immediately report any evidence which "reasonably supports" that conclusion. Such evidence will generally not be conclusive as to the substantiality of the risk; it should, however, reliably ascribe the effect to the chemical.

Information from the following sources concerning the effects described in Part V will often "reasonably support" a conclusion of substantial risk. Consideration of corroborative information before reporting can only occur where it is indicated below.

(1) *Designed, controlled studies.* In assessing the quality of information, the respondent is to consider whether it contains reliable evidence ascribing the effect to the chemical. Not only should final results from such studies be reported, but also preliminary results from incomplete studies where appropriate. Designed, controlled studies include:

(i) In vivo experiments and tests.

(ii) In vitro experiments and tests. Consideration may be given to the existence of corroborative information, if necessary to reasonably support the conclusion that a chemical presents a substantial risk.

(iii) Epidemiological studies.

(iv) Environmental monitoring studies.

(2) *Reports concerning and studies of undesigned, uncontrolled circumstances.* It is anticipated here that reportable effects will generally occur in a pattern, where a significant common feature is exposure to the chemical. However, a single instance of cancer, birth defects, mutation, death, or serious incapacitation in a human would be reportable if one (or a few) chemical(s) was strongly implicated. In addition, it is possible that effects less serious than those described in Part V(a) may be preliminary manifestations of the more serious effects and, together with another triggering piece of information, constitute reportable information; an example would be a group of exposed workers experiencing dizziness together with preliminary experimental results demonstrating neurological dysfunctions.

Reports and studies of undesigned circumstances include:

(i) Medical and health surveys.

(ii) Clinical studies.

(iii) Reports concerning and evidence of effects in consumers, workers, or the environment.

VII. Information Which Need Not Be Reported

Information need not be reported if it:

(a) Has been published by EPA in reports;

(b) Has been submitted in writing to EPA pursuant to mandatory reporting requirements under TSCA or any other authority administered by EPA (including the Federal Insecticide, Fungicide and Rodenticide Act, the Clean Air Act, the Federal Water Pollution Control Act, the Marine Protection, Research, and Sanctuaries Act, the Safe Drinking Water Act, and the Resource Conservation and Recovery Act), provided that the information: (1) Encompasses that required by Part IX (c) through (f); and (2) is from now on submitted within the time constraints set forth in Part IV and identified as a section 8(e) notice in accordance with Part IX(b);

(c) Has been published in the scientific literature and referenced by the following abstract services: (1) Agricola, (2) Biological Abstracts, (3) Chemical Abstracts, (4) Dissertation Abstracts, (5) Index Medicus, (6) National Technical Information Service.

(d) Is corroborative of well-established adverse effects already documented in the scientific literature and referenced as described in (c) above, unless such information concerns emergency incidents of environmental contamination as described in Part V(c), or

(e) Is contained in notification of spills under section 311(b)(5) of the Federal Water Pollution Control Act.

VIII. Information First Received by a Person Prior to the Effective Date of TSCA

Any substantial risk information possessed by a person prior to January 1, 1977, of which he is aware after that date shall be reported within 60 days of publication of this policy statement. The Agency considers that a person is "aware" of:

(a) Any information reviewed after January 1, 1977, including not only written reports, memoranda and other documents examined after January 1, 1977, but also information referred to in discussions and conferences in which the person participated after January 1, 1977;

(b) Any information the contents of which a person has been alerted to by date received after January 1, 1977, including any information concerning a chemical for which the person is presently assessing health and environmental effects;

(c) Any other information of which the person has actual knowledge.

IX. REPORTING REQUIREMENTS

Notices shall be delivered to the Document Control Officer, Chemical Information Division, Office of Toxic Substances (WH-557), Environmental Protection Agency, 401 M Street SW., Washington, D.C. 20460.

A notice should:

(a) Be sent by certified mail, or in any other way permitting verification of its receipt by the Agency,

(b) State that it is being submitted in accordance with section 8(e),

(c) Contain the job title, name, address, telephone number, and signature of the person reporting and the name and address of the manufacturing, processing, or distributing establishment with which he is associated,

(d) Identify the chemical substance or mixture (including, if known, the CAS Registry Number),

(e) Summarize the adverse effects being reported, describing the nature and the extent of the risk involved, and

(f) Contain the specific source of the information together with a summary and the source of any available supporting technical data.

For emergency incidents of environmental contamination (see Part V(c)), a person shall report the incident to the Administrator by telephone as soon as he has knowledge of the incident (see below for appropriate telephone contacts). The report should contain as much of the information required by instructions (b) through (f) above as possible. A written report, in accordance with instructions (a) through (f) above, is to be submitted within 15 days. Twenty-four hour emergency telephone numbers are:

Region I (Maine, Rhode Island, Connecticut, Vermont, Massachusetts, New Hampshire), 617-223-7265.
Region II (New York, New Jersey, Puerto Rico, Virgin Islands), 201-548-8730.
Region III (Pennsylvania, West Virginia, Virginia, Maryland, Delaware, District of Columbia), 215-597-9898.
Region IV (Kentucky, Tennessee, North Carolina, South Carolina, Georgia, Alabama, Mississippi, Florida), 404-881-4062.
Region V (Wisconsin, Illinois, Indiana, Michigan, Ohio, Minnesota), 312-353-2318.
Region VI (New Mexico, Texas, Oklahoma, Arkansas, Louisiana), 214-749-3840.
Region VII (Nebraska, Iowa, Missouri, Kansas), 816-374-3778.
Region VIII (Colorado, Utah, Wyoming, Montana, North Dakota, South Dakota), 303-837-3880.
Region IX (California, Nevada, Arizona, Hawaii, Guam), 415-556-6254.
Region X (Washington, Oregon, Idaho, Alaska), 206-442-1200.

X. CONFIDENTIALITY CLAIMS

(a) Any person submitting a notice to EPA under section 8(e) of TSCA may assert a business confidentiality claim covering all or part of the information contained in the notice. Any information covered by a claim will be disclosed by EPA only to the extent, and by means of the procedures, set forth in 40 CFR Part 2 (41 FR 36902, September 1, 1976).

(b) If no claim accompanies the notice at the time it is submitted to EPA, the notice will be placed in an open file to be available to the public without further notice to the submitter.

(c) To assert a claim of confidentiality for information contained in a notice, the submitter must submit two copies of the notice.

(1) One copy must be complete. In that copy the submitter must indicate what information, if any, is claimed as confidential by marking the specified information on each page with a label such as "confidential," "proprietary," or "trade secret."

(2) If some information in the notice is claimed as confidential, the submitter must submit a second copy. The second copy must be complete except that all information claimed as confidential in the first copy must be deleted.

(3) The first copy of the notice will be disclosed by EPA only to the extent, and by means of the procedures, set forth in 40 CFR Part 2. The second copy will be placed in an open file to be available to the public.

(d) Any person submitting a notice containing information for which they are asserting a confidentiality claim should send the notice in a double envelope.

(1) The outside envelope should bear the same address outlined in section IX of this policy statement.

(2) The inside envelope should be clearly marked "To be opened only by the OTS Document Control Officer."

XI. FAILURE TO REPORT INFORMATION

Section 15(3) of TSCA makes it unlawful for any person to fail or refuse to submit information required under section 8(e). Section 16 provides that a violation of section 15 renders a person liable to the United States for a civil penalty and possible criminal prosecution. Pursuant to section 17, the Government may seek judicial relief to compel submittal of section 8(e) information and to otherwise restrain any violation of section 8(e).

APPENDIX A.—QUICK REFERENCE SUMMARY FOR EMERGENCY INCIDENTS OF ENVIRONMENTAL CONTAMINATION

A. WHAT SHOULD BE REPORTED AS AN EMERGENCY INCIDENT

An emergency incident of environmental contamination is "any environmental contamination by a chemical substance or mixture . . . which, because of the pattern, extent and amount of contamination, (1) Seriously threatens humans with cancer, birth defects, mutation, death, or serious or prolonged incapacitation, or (2) seriously threatens non-human organisms with large scale or ecologically significant population destruction". (See Part V(c) for complete description.)

B. WHAT NEED NOT BE REPORTED AS AN EMERGENCY INCIDENT

Information contained in notification of spills under section 311(b)(5) of the Federal Water Pollution Control Act (FWPCA). (For a complete list of exemptions to reporting, see Part VII.)

C. WHEN AND WHERE TO REPORT EMERGENCY INCIDENTS

Emergency incidents of environmental contamination are to be reported immediately by telephone to the appropriate EPA Regional 24-hour telephone emergency line listed below.

Region I (Maine, Rhode Island, Connecticut, Vermont, Massachusetts, New Hampshire), 617-223-7265.
Region II (New York, New Jersey, Puerto Rico, Virgin Islands), 201-548-8730.
Region III (Pennsylvania, West Virginia, Virginia, Maryland, Delaware, District of Columbia), 215-597-9898.
Region IV (Kentucky, Tennessee, North Carolina, South Carolina, Georgia, Alabama, Mississippi, Florida), 404-881-4062.
Region V (Wisconsin, Illinois, Indiana, Michigan, Ohio, Minnesota), 312-353-2318.
Region VI (New Mexico, Texas, Oklahoma, Arkansas, Louisiana), 214-749-3840.
Region VII (Nebraska, Iowa, Missouri, Kansas), 816-374-3778.
Region VIII (Colorado, Utah, Wyoming, Montana, North Dakota, South Dakota), 303-837-3880.
Region IX (California, Nevada, Arizona, Hawaii, Guam), 415-556-6254.
Region X (Washington, Oregon, Idaho, Alaska), 206-442-1200.

In addition, a written report, in accordance with instructions (a) through (f) of Part IX, is to be submitted within 15 days to the Document Control Officer, Chemical Information Division, Office of Toxic Substances (WH-557), 401 M Street SW., Washington, D.C. 20460.

APPENDIX B—SIGNIFICANT COMMENTS AND RESPONSES

A. PERSONS SUBJECT TO THESE REQUIREMENTS

Comment 1: Employees cannot be held subject to these requirements, since: (a) They only have a partial role in the manufacture, processing, or distribution of chemicals, (b) in other sections of TSCA, the term "person who manufactures, processes, or distributes" chemicals clearly refers to business organizations; "persons" should be consistently defined, and (c) the application of criminal penalties mandates a strict interpretation of this word.

Response: The Agency considers that different sections of TSCA, having different purposes, are appropriately directed to different respondents. In the case of section 8(*e*), officers and employees who are capable of appreciating the significance of information have a legitimate responsibility to be alert to and report substantial-risk information. The guidance has been modified so that natural persons and business entities can fulfill their section 8(e) obligations in different ways. Most officers and employees can discharge their section 8(e) obligations by submitting pertinent information to corporate superiors, provided that the company has established the risk-evaluation procedures characterized in Part II. In the case of a business organization, its president, chief executive officer, and other officials responsible and having authority for the business organization's execution of its section 8(e) obligations must ensure that the organization reports substantial-risk information to EPA.

Comment 2: Even if employees can be held subject to these requirements, they should not be. To do so would force employees and employers into conflicting positions, inviting internal corporate dissension and over- reporting. Further, individuals often do not have the overview necessary to reach considered, well-supported decisions. Corporate reporting by designated officials will provide EPA with more reliable data.

Response: The Agency considers that employees have a legitimate role in risk reporting; it is imperative that risk information obtained by employees be appropriately considered. Officers and employees can fulfill their role in the reporting of substantial-risk information, without the disadvantages described above, by reporting information to superiors for corporate consideration, and, having done so, will have discharged their obligation to EPA. This is contingent upon the establishment by the business organization of certain procedures for risk-evaluation, thereby assuring the appropriate consideration of such reports. Those officers responsible and having authority for the organization's execution of its section 8(e) obligations must ensure that the organization reports substantial-risk information to EPA.

Comment 3: Clarify which employees are covered, and the extent of their obligation. Are employees "capable of appreciating pertinent information" by virtue of rank, or knowledge? Are rank and file employees subject to these requirements, or just supervisory and managerial personnel, company toxicologists, etc.? Is an employee absolved of further responsibility if he reports to his supervisor?

Response: The Agency considers that the phrase "capable of appreciating the significance of pertinent information" appropriately describes those officers and employees who have a responsibility to be alert to and report substantial-risk information, including not only relatively senior corporate officers but also many corporate employees. The policy statement modifies the September 9 proposal, in response to the concerns expressed in Comments 2 and 3, to permit most officers and employees to discharge their obligation by submitting information to corporate superiors, subject to the conditions described in Part II.

Comment 4: Consultants and independent labs should not be subject to these requirements.

Response: Contractors and independent labs are not responsible for reporting information they have obtained directly to EPA; rather, their client manufacturers, processors and distributors are responsible for reporting such information.

B. THE "OBTAINING" OF INFORMATION

Comment 5: The "may suggest" criterion in Part III of the proposal serves to compel further examination of information that by itself is not subject to section 8(e) requirements. The statutory language calling for "reasonable support" does not support this. Further, risk assessment often requires anywhere from months to several years of study after preliminary results "suggest" risk, far exceeding the 15-day compliance period.

Response: The Agency does not intend to compel under section 8(e) examination of information that by itself is not subject to section 8(e) requirements and has deleted the "may suggest" provision, providing its interpretation of what constitutes evidence that "reasonably supports the conclusion" of substantial risk in a new Part VI.

Comment 6: Section 8(e) obligations are incurred upon obtaining conclusory substantial-risk information.

Response: The Agency disagrees, and considers that "reasonable support" of a conclusion of substantial risk is not identical to the conclusion itself. The former typically occurs, and must be reported, at an earlier stage.

Comment 7: The statement, in Part III of the proposal that a person has obtained information if he ". . . should know of the existence of such information not in his possession but which would be delivered to him on request," tends to compel an active search for substantial-risk information rather than the reporting of substantial-risk information a person "obtains." This is of particular concern to importers with limited access to information possessed by their suppliers.

Response: The Agency considers that section 8(e) applies to information which a person possesses or of which he knows. It is not intended to compel searches for information or extraordinary efforts to acquire information. The Agency further considers, however, that "known" information includes information which a prudent person similarly situated could reasonably be expected to know. Negligence or intentional avoidance of information does not absolve a person of his section 8(e) obligation. Part III has been modified to express these intentions.

Comment 8: Circumstances can exist when coming "into possession" of risk information does not correspond to an understanding of the implications of the information; "obtains" should be defined in terms of possession of information and awareness of its import.

Response: The "obtaining" of information occurs via persons who are "capable of appreciating the significance of pertinent information." There will likely be circumstances in which the evaluation of information clarifies its full import; the establishment of corporate procedures for processing risk-information prescribed in Part II will expedite this.

C. TIME ALLOWED FOR COMPLIANCE

Comment 9: Fifteen calendar days is insufficient to determine whether information which "may suggest" substantial risk should be reported; it is even insufficient to accommodate normal procedural time constraints (corporate processing, mailing, holidays, etc.).

Response: The Agency has changed the compliance period to 15 business days. It is imperative that procedures be established to expedite the reporting of substantial-risk information, not that reporting conform to existing procedures.

Comment 10: Allow from 30 to 90 days for the second phase of reporting; alternatively, do not prescribe a time limit for additional reporting.

Response: Having deleted the "may suggest" criterion, the Agency sees no need to provide a second phase to the reporting period. Supplemental information that is generated after a section 8(e) notification should, if appropriate, be immediately reported.

Comment 11: Allow from 30 to 120 days to report pre-1977 information; this period should commence: (a) upon final publication, (b) January 1, 1978, (c) following the inventory reporting period since many of the same corporate personnel will be implementing both requirements.

Response: The policy statement prescribes a 60 day reporting period, commencing immediately upon publication. Section 8(e) has been in effect since January 1, 1977; postponement in reporting substantial-risk information is not warranted.

D. EFFECTS AND INFORMATION THAT MUST BE REPORTED

Comment 12: The reporting of "any instance" of cancer, birth defects, etc., in humans is too broad and such information will be of little use; chemical workers, like the general population, develop cancers and other ailments of uncertain etiology.

Response: This policy statement clarifies that the reporting of single occurrences of human cancer or other serious effects will depend upon evidence strongly implicating one (or a few) chemical(s).

Comment 13: Dermal ailments and nausea are poorly chosen examples of precursor symptoms. Deleting these examples will avoid unduly emphasizing them when other symptoms may be more important, yet will not eliminate the obligation to report them if they are suspected precursors.

Response: The Agency agrees.

Comment 14: How are reportable data distinguished from routine tests including range tests such as LD_{50}'s?

Response: This policy statement directs the reporting of specified effects when unknown to the Administrator. Many routine tests are based on a knowledge of toxicity associated with a chemical; unknown effects occurring during such a range test may have to be reported if they are those of concern to the Agency and if the information meets the criteria set forth in Parts V and VI.

Comment 15: The most widespread "in vitro" test is the Ames test, which is subject to considerable debate. Clarify the circumstances under which positive results of in vitro tests must be reported.

Response: Part VI clarifies that the reporting of in vitro tests will depend upon the existence of corroborative information if necessary to reasonably support the conclusion of substantial risk.

Comment 16: The description of "extreme persistence" as a substantial risk is an example of the need to redefine Part V(c) ("Environmental Effects"). Persistence and bioaccumulation should be considered risks only when coupled with toxicity and significant exposure.

Response: Part V now clarifies those effects for which reporting depends upon a significant exposure potential. Persistence by itself is no longer itemized as a reportable effect but rather is considered to be a component of exposure potential; it may also underlie the measurements described in Part V(b)(1). Laboratory indicators of pronounced bioaccumulation are to be reported when coupled with potential for widespread exposure and any non-trivial adverse effect.

Comment 17: The n-octanol/water partition coefficient addresses a physico-chemical property, not biological effects, and is not alone an indicator of substantial risk; further, the values stated for the coefficient and the bioaccumulation factor in fish do not correspond.

Response: The Agency acknowledges the numerical error and has amended the values to correspond. This policy statement now directs the reporting of an experimental measurement of bioaccumulation when coupled with an adverse effect and potential for widespread exposure.

Comment 18: The requirement that information which "links" an effect to a chemical be reported is too broad and contradicts the statutory language of "reasonably supports".

Response: The Agency has provided in a new Part VI its interpretation of "reasonably supports".

Comment 19: A determination that information "reasonably supports the conclusion" of substantial risk cannot be made independently of considerations of use since the method and manner of using a chemical may influence the occurrence of an effect; in particular, the criteria should reflect a distinction between normal and abnormal uses of chemicals.

Response: The Agency considers that the appropriate components of a "substantial risk" with respect to a chemical are (a) the seriousness of the effect, and (b) total exposure potential. The method and manner of using a chemical is one of several factors determining its exposure potential. As described in Part V, the importance of exposure potential as a component of "substantial risk" depends upon the kind of effect of concern. Thus, the effects described in Part V(a) are so serious that relatively little weight is given to exposure; the effects described in Parts V (b) and (c) involve a significant exposure or exposure potential.

The Agency further considers that a definition of "normal" use for a particular chemical will often depend upon a knowledge of the risks associated with the chemical.

E. INFORMATION THAT NEED NOT BE REPORTED

Comment 20: Information published in scientific literature in languages other than English should be exempted if published in summary form by abstracting services. Can the accuracy of English language abstracts and commercial translations of foreign literature be assumed?

Response: This policy statement now provides that information published in scientific literature, whether in English or another language, is exempt from reporting if published in summary form by certain specified abstract services.

Comment 21: Information exchange systems with other Federal agencies should be immediately established so that respondents need not report to EPA information already reported to other Agencies, and vice versa. Such duplicative reports are unduly burdensome.

Response: EPA is coordinating this program with other agencies now. When this coordination is successfully completed, the policy statement will be amended to exempt from the reporting requirement information that has been submitted to other specified agencies. In the meantime, substantial-risk information must be reported directly to EPA; such a report does not discharge any reporting obligation to other agencies.

F. INFORMATION FIRST RECEIVED PRIOR TO THE EFFECTIVE DATE OF TSCA

Comment 22: The tense of the verb "obtains" reveals that section 8(e) was intended to be applied prospectively to information newly acquired after January 1, 1977. Utilize section 8(d) or other rules to acquire information obtained before then.

Response: As discussed in the preamble to the September 9 proposal, the Agency considers section 8(e) to apply to risk information possessed by or known to a person before, on, or after January 1, 1977. Concerning information first obtained before 1977, this policy statement continues to require reporting of information received if a person has been aware of it since January 1, 1977, for the reasons discussed in the September 9 preamble.

Comment 23: The term "aware" is too vague to be of any help in responding to these requirements. Since many corporate employees are potentially subject to these requirements, and given uncertainty over the extent to which they ought to be aware of pre-1977 information, this provision tends to compel the very file search it was intended to avoid. The term "aware" should be further defined, possibly in terms of actual knowledge.

Response: The Agency in Part VIII of this policy statement now defines the pre-1977 information of which a person is considered to be aware.

G. CONFIDENTIAL INFORMATION

Comment 24: EPA should delay guidance until procedures are published governing the treatment of confidential submissions.

Comment 25: EPA should treat all submissions as confidential until the information is verified.

Comment 26: EPA should automatically publish section 8(e) notices.

Response to Comments 24 through 26: EPA has included a new Part X which describes how to submit a claim of confidentiality and states that any or all of the information submitted may be claimed as confidential. Such information will be disclosed by EPA only to the extent, and by means of the procedures, set forth in 40 CFR Part 2.

H. MISCELLANEOUS

Comment 27: What is the statutory basis or need for guidance? What is its exact status under the Administrative Procedure Act?

Response: This policy statement sets forth EPA's interpretation of and policy concerning TSCA section 8(e). As an interpretive rule and statement of policy it is not subject to the comment period and delayed effective date provisions of the Administrative Procedure Act (5 U.S.C. 553). Although TSCA does not mandate a policy statement, the Agency of necessity must develop the criteria which will govern enforcement activities. Trade associations and businesses were among those who previously expressed interest in such a statement to guide their compliance.

Comment 28: Clarify whether these requirements apply to chemicals previously but no longer manufactured, processed, or distributed in commerce by a person.

Response: Information obtained before 1977 must be reported if the person has been aware of it since January 1, 1977, as prescribed by Part VIII. Concerning chemicals which a person has discontinued manufacturing, processing, or distributing since January 1, 1977, information obtained before the time of discontinuation is subject to these requirements. It is expected that the acquisition of information after that time will be minimal; however, should additional information be acquired, it may trigger the reporting described in Part VIII.

Comment 29: Clarify the meaning of "substantial risk" relative to other risks addressed by TSCA.

Response: A substantial risk is defined in Part V(a) of this policy statement as a risk of considerable concern because of (a) the seriousness of the effect, and (b) the fact or probability of its occurrence. As opposed to other risks addressed by TSCA, economic or social benefits of use, or costs of restricting use, are not to be considered in determining whether a risk is "substantial".

Comment 30: To what extent are "users" of chemicals subject to these requirements?

Response: The Agency considers that many industrial uses of chemicals actually fall within the scope of "processing" chemicals. A manufacturer, processor, or distributor who obtains substantial-risk information concerning chemicals he handles should be alert to the possibility he may have to report it.

Comment 31: Are chemicals manufactured, processed and distributed in commerce in small quantities solely for purposes of research and development subject to these requirements?

Response: In general, the Agency considers that much manufacturing, processing, and distribution in commerce of chemicals in small quantities solely for purposes of research and development is conducted for "commercial purposes". Such purposes would include the sale and distribution of such materials, as well as their use by the manufacturer or processor in activities (for example, product research and development and studies assessing the feasibility and safety of using chemicals) preceding his or a client's commercial use of such materials or others on a larger scale.

As described in Part V, the Agency considers that "substantial risks" depend in part upon an exposure potential. Thus, the occurrence of the effects described in Part V(a) presuppose exposure to the chemical and must be reported; reporting of the other effects will depend upon a potential for significant levels of exposure.

Comment 32: Are raw materials, intermediates, and inert ingredients produced or used in the manufacture of a pesticide subject to TSCA?

Response: The Administrator considers that raw materials, intermediates and inert ingredients produced or used in the manufacture of a pesticide are substances or mixtures which can be regulated under TSCA.

In order to be considered a pesticide, a substance must be intended for use as a pesticide. Raw materials, intermediates, and inert ingredients produced or used in the manufacture of a pesticide are not themselves regulated under FIFRA (unless they happen to be pesticides themselves) and, therefore, are subject to TSCA. The pesticide regulations at 40 CFR 162.4 are consistent with this view.

Comment 33: Are intermediates and catalysts intended solely for use in the production of a food, food additive, drug, cosmetic, or device subject to TSCA?

Response: The Administrator considers that intermediates and catalysts intended solely for use in the production of a food, food additive, drug, cosmetic, or device are excluded from regulation under TSCA. The definitions of the FFDCA provide that chemical substances which are intended for use as a component of a food, food additive, drug, cosmetic, or device are encompassed within the meaning of such terms, respectively. The FDA considers intermediates and catalysts to be such components. Therefore, they are subject to regulation under the FFDCA. Any such substance is excluded from regulation under TSCA insofar as it is actually manufactured, processed, or distributed in commerce solely for use in the production of a food, food additive, drug, cosmetic, or device.

Comment 34: Employees should have the option to submit reports anonymously.

Response: EPA considers that any person may report information to EPA under TSCA. Those who are required to do so under section 8(e) are persons who manufacture, process, or distribute in commerce chemical substances or mixtures, including not only business entities but also such employees as described in Part II. In order to establish that such persons have discharged their obligations, and in order to encourage responsible review of the quality of information and the substantiality of risks, EPA believes that notifiers should identify themselves. Section 23 will adequately protect employees from discrimination pursuant to notifications they have made under section 8(e).

[FR Doc. 78-7064 Filed 3-15-78; 8:45 am]

APPENDIX B. STATUS REPORTS BY CHEMICAL NAME

CHEMICAL NAME	SUBMISSION NO.	
(DICHLORO-TRIAZINO)AMINO-BENZYL-SULFONATE	05780164	
ACETAMIDINE,N-(2-ISOPROPOXYCARBONYL-1-METHYLVINYL-METHOXYTHIOPHOSPHORAMIDO)	06780196 07780224	* *
ACETIC ACID, CHLORO-	05780154P	
ACETIC ACID, METHYL ESTER	03780114	*
ACETIC ACID, SODIUM SALT	04780120	*
ACETIC ACID, VINYL ESTER	04780124	*
ACETONITRILE	05780149	
ACETOPHENONE, 2,2'-DI(SEC-BUTOXY)	10780251	
ACETYLENECARBOXYLIC ACID, MONOPOTASSIUM SALT	12780263	*
ACRYLIC ACID, ETHYL ESTER	10780250	
ACRYLIC ACID, 2-ETHYLHEXYL ESTER	12780262	
ALUMINUM SULFATE	01780034	
AMMONIUM SULFATE	01780034	
AMPICILLIN TRIHYDRATE	02780045	*
AP-1155 - POLYAROMATIC AMINES	02780057S	
AROMATIC HYDROCARBONS	12770026C	
ARSENIC/CADMIUM COMPOUNDS (INCLUDING MINING & SMELTING COMPOUNDS	05780150	*
BENZAL CHLORIDE	07770001	
BENZAMIDINE, N(2-METHOXYCARBONYL-1-METHYLVINYL-METHOXY-THIOPHOSPHORYL)	06780195	*
BENZENE	12770027 03780112 09780244 03790277	 *
BENZENE, N,N-DIETHYL-4-(1H-1,2,4 TRIAZOL-3-YLAZO)	01790271	
BENZENE, 1,4-DIBROMO-2,5-DICHLORO-	06780200	*
BENZO-1,5-DIAZEPINE, 2-ETHYL-7-FLUORO-4(4-METHYL-1-PERAZINYL)10H-THIENO(2,3-B)	05780161S	*
BENZOFLEX S-552	07780229	*
BENZOIC ACID	11770018P	*

APPENDIX B. STATUS REPORTS BY CHEMICAL NAME

CHEMICAL NAME	SUBMISSION NO.
BENZOYL CHLORIDE	07770001 01780041 * 04780138P * 05780156 * 06780180 *
BETA-(DIMETHYLAMINO)PROPIONITRILE	03780105
BIPHENYL	11780256
BIS(TRIBROMONEOPENTYL)PENTAERYTHRITOL CYCLIC DIPHOSPHATE [MC 948]	02780060 * 02780071 03780092 * 03780098 * 05780145 * 06780188 *
BIS(1,3-DICHLORO-2-PROPYL)-3-CHLORO-2,2-DIBROMOMETHYL-1-PROPYL PHOSPHATE [MC 984	12770022 01780033 02780048 02780049 02780053 03780100 * 03780107 04780136 * 06780173 * 06780190 *
BIS(2-(DIMETHYLAMINO)ETHYL)ETHER	03780105
BIS(2,3-DIBROMOPROPYL)ETHER [MC 933]	03780091 * 04780131 *
BISPHENOL A-EPICHLOROHYDRIN RESINS	05790289
BROMINATED AROMATIC OILS [CN-110-109]	02780074 *
BROMOACETALDEHYDE	04780126 *
BROMODICHLOROBENZENE (NEUTRAL OILS FROM HYDROLYSIS)	07780220 *
BUT-2-ENOIC ACID, 2,2,4,4,4-PENTACLORO, N-BUTYL ESTER	11780259
BUTANE, 2-METHYL-	09780240
C.I. VAT GREEN #9	04790278 04790279
CALCIUM SULFATE	05780150 *
CARBON TETRACHLORIDE	03780110 * 03780113 *
CHLORDENE EPOXIDE	03780093 *

APPENDIX B. STATUS REPORTS BY CHEMICAL NAME

CHEMICAL NAME	SUBMISSION NO.	
CHLORENDIC ANHYDRIDE	02780058	*
	02780059	*
	03780094	*
	03780101	*
	04780127	*
	04780134	
	06780206	*
	08780231	
CHLORINATED DIOXIN	07780209	
CHLORINATED HYDROCARBONS	05780147	
CHLORINATED NORBORNENE DERIVATIVES	03780089	*
CHLORINE	05780146	
	06780183	
CHLOROPHENOLS	07780209	
CHROMATES	03780096	*
COBALT METAL SALTS	05780167	
COPPER METAL SALTS	05780167	
COPPER SMELTING COMPOUNDS	05780168	
CR-141	05780152	
CRUDE SHALE OILS	01780030	
	02780083	
	07780216	
CYCLOPENTADIENE	06780189P	
CYCLOPENTADIENE, HEXACHLORO-	11770013	
	01780037	
	01780038	
	02780054	
	02780061	
	02780064	
	03780099	*
	03780102	*
	03780109	*
	03780110	*
	06780189P	
	06780208	
DECOFURANURONIC ACID,6,9-DIAMINO-1-(AMINO-9H-PURIN-9-YL)-1,5,6,7;8,9-HEXADEOXY-B	05780157	*
DIBENZO-P-DIOXIN, 2,3,7,8-TETRACHLORO-	07780209	
DIBENZO-P-DIOXIN, 2,7-DICHLORO-	10770008	

APPENDIX B. STATUS REPORTS BY CHEMICAL NAME

CHEMICAL NAME	SUBMISSION NO.
DIBENZO-P-DIOXIN,POLYCHLORINATED	03780085
DIBROMOETHYL ACETATE	09770005 * 02780070 04780121 *
DICYCLOPENTADIENE	02780077P * 03780097 * 04780138P * 06780180 *
DICYCLOPENTADIENE ACRYLATE	11770017P * 06780207 *
DICYCLOPENTADIENE ALCOHOL	02780077P * 03780097 * 04780138P * 07780222 *
DIESEL FUEL	02780082
DIISOPROPYLAMINO ETHYL CHLORIDE HYDROCHLORIDE	02780067 *
DIMETHYL DISULFIDE	05780149
DIMETHYLAMINE SULFATE	12780264
DIMETHYLAMINE, N-NITROSO-	12780264
DIMETHYLAMINOISOPROPYL CHLORIDE HYDROCHLORIDE	02780073
DIPHENYLMETHANE DIISOCYANATE	03780084 * 05780144
DIPROPYLENE GLYCOL DIBENZOATE	06780181 *
EPICHLOROHYDRIN	11770016 08780230
ETHANE, 1,1,1-TRIFLUORO-2-CHLORO-	01790267
ETHANE, 1,1,2,2-TETRABROMO-	10780254
ETHANE, 1,2-BIS(2,4,6-TRIBROMOPHENOXY) [FM 680]	01780040P 03780086 * 03780115 * 06780184 *
ETHANE, 1,2-DICHLORO-	07780228 *
ETHANE, 1,2-DIPIPERIDINO-	01780035 05780158S *

APPENDIX B. STATUS REPORTS BY CHEMICAL NAME

CHEMICAL NAME	SUBMISSION NO.	
ETHANE, 2-BROMO-1,1-DIMETHOXY-	04780119 06780179	* *
ETHANOL, 2-CHLORO-	05780139	
ETHER, DIPHENYL	11780256	
ETHOXYLATED C12-C15 ALCOHOLS	05790284	
ETHYLAMINE,2-CHLORO-N,N-1-TRIMETHYL-, HYDROCHLORIDE	06780177	*
ETHYLENE GLYCOL, 2-HYDROXYPROPYL-2(2-HYDROXYETHYL)	06780187	*
ETHYLENE OXIDE	10780248	
ETHYLENE, BROMO-	11770019 08780234 04790281	
ETHYLENE, CHLORO-	03780104	
ETHYLENE, TETRACHLORO-	05780146	
ETHYLENE, TRICHLORO-	05780146	
FC-70 DECOMPOSITION PRODUCTS	10770011	
FLUORINE COMPOUNDS	02780042	
FUEL OIL	09780238	*
GLYCIDYL ACRYLATE	01790270	
GLYCIDYL METHACRYLATE	01790270	
HEXABROMOCYCLODODECANE [FM 100]	02780051 02780065 04780137	* * *
HEXABROMOCYCLODODECANE (RESIDUE)	03780088	*
HEXACHLORONORBORNADIENE	06780189P	
HEXYN-3-OL	01790273	
HYDRAULIC FLUID	10770012	
HYDROCARBON SOLVENTS	08770002	
HYDROCARBON SOLVENTS	10770010	
HYDROGEN CHLORIDE	05780146	
HYDROGEN SULFIDE	08780237	*

APPENDIX B. STATUS REPORTS BY CHEMICAL NAME

CHEMICAL NAME	SUBMISSION NO.	
HYDROXYACETALDEHYDE DIMETHYL ACETAL	03780111	*
IMIDAZOLIDIN-2-ONE, 1-(5-T-BUTYL-1,3,4-THIADIAZOL-2-YL)-3-METHYL-5(M-CHLOROBENZO	06780199	*
IMIDAZOLIDINONE, 1-(5-T-BUTYL-1,3,4-THIADIAZOL-2-YL)-3-METHYL-5-ACETOXY-2-	06780193	*
INK ROLLER DESENSITIZER	11780258	*
INTERMEDIATE CLARIFIED OIL SOLVENT EXTRACT	10780253	
ISOCYANATE DIMER OF 5-T-BUTYL-1,3,4-THIADAZOL-2-YL	03780087	*
KENPLAST G (MIXED AROMATIC HYDROCARBONS)	07780214	
LEAD METAL SALTS	05780167	
M-IODOTOLUENE	05790287	
MALEIC ANHYDRIDE	02780063	*
MERCURIC OXIDE	12770021	
METHANETHIOL	05780149	
METHANOL	03780108	*
METHENDIC ANHYDRIDE	02780063	*
METHYL-M-CHLOROBENZOATE	06780201 07780223 07780226	* * *
METHYLCYCLOPENTADIENYLMANGANESE TRICARBONYL	07780211	
MULTILITHE DEGLAZING SOLVENT	11780258	*
N(2-CHLOROETHYL)-N-ETHYLANILINE	05780169S	*
N(2-METHYL-2-NITROPROPYL)-4-NITROSOANILINE	05780165	
N-(2-CHLOROETHYL)-N-ETHYL-M-TOLUIDINE	04790282S	
N-(2,4-DINITRO-6-(TRIFLUOROMETHYL)PHENYL)-N-METHYL-2,4,6--TRIBROMOBENZENAMINE	05780162S	*
N-METHOXY-4-CHLOROBENZAMIDE	07780221	*
N-METHYLAMINO ACETALDEHYDE DIMETHYL ACETAL	01780036	*
N,N'-DIBUTYL-1,6-HEXANEDIAMINE	05780163	
NAPTHENIC OIL MIXTURE	02780044	
NATURAL GAS.	11780260	*

APPENDIX B. STATUS REPORTS BY CHEMICAL NAME

CHEMICAL NAME	SUBMISSION NO.	
NEOPENTYL GLYCOL DIACRYLATE	01780028	
NICKEL	09780246	
NICKEL METAL SALTS	05780167	
NITROANILINE, 2-N(2,2,3,3TETRAFLUOROPROPYL-1-AMIDE)-4-TRIFLUOROMETHYL-	05780159S	*
NUMBER 2 BURNER FUEL	07780215	
O-ANISIDINE, 5-METHYL-	08780236	*
OCTACHLOROCYCLOPENTENE	02780062	
OCTAN-2-ONE, 5-METHYL-	02790275	
OCTANOYLIMIDAZOLIDIN-2-ONE, 1-(5-T-BUTYL-1,3,4-THIADIAZOL-2-YL)-3-METHYL-5-	06780194	*
PCL BOTTOMS & HEX PCL BOTTOMS	09770004	*
PENTABROMOPHENYL-2,3-DIBROMOCARBONATE	12770025	
PENTACHLOROCYCLOPENTADIENE	06780189P	
PENTANE, 1-CYANO-2-AMINO-2,4-DIMETHYL	05780153S	*
PERFLUOROIMINE	10770011	
PERFLUOROISOBUTYLENE	10770011	
PETROLEUM CRUDE FRACTIONS	07780212	
PETROLEUM CRUDE FRACTIONS,HIGH BOILING	01780029	
PETROLEUM DISTILLATES	05780140 05780148	
PHENOL FORMALDEHYDE RESIN	03780084	*
PHENOL, 2,4,6-TRIBROMO-	12770024 12770032 02780069 03780095 06780198	 * *
PHENYL ISOCYANATE	06780178	
PHOSGENE	02780076P 02780079P	* *
PHOSPHONITRILIC CHLORIDE	05790288	
PHOSPHONIUM SALTS	02780052P	

APPENDIX B. STATUS REPORTS BY CHEMICAL NAME

CHEMICAL NAME	SUBMISSION NO.
PHOSPHONOTHIOIC ACID, PHENYL-, O-(4-BROMO-2,5-DICHLOROPHENYL) O-METHYL ESTER	02780043 07780218
PHOSPHORIC ACID, 2,2-BIS(BROMOMETHYL)-3-HYDROXY-1-PROPYL	06780174 *
PHOSPHORIC ACID, 2,3-DIBROMOPROPYL, TRIESTER	10770007 02780056 04780123 04780128 06780192S
PHOSPHOROUS OXYCHLORIDE	02780078P * 02780080P *
PIPERAZINE, 2-HYDROXYETHYL-	11780256
PLUMBANE, TETRAETHYL-	10780249
PLUMBANE, TETRAMETHYL-	10780249
POLYBROMINATED BIPHENYLS	07780209
POLYCHLORINATED BIPHENYLS	07780209
POLYDIBROMOPHENYLENE OXIDE [MC 935A]	02780066 * 03780090 * 03780103 * 04780132 * 05780141 * 06780191
POLYETHYLATED BENZENE TAILS	06780202
POLYNUCLEAR AROMATIC HYDROCARBONS	04780117 *
POLYSTYRENE WASTE STREAMS	10780245
POLYVEL G-100	06780205 *
POLYVEL M-106 POLYMER	02780050 *
PROPANE, 1,2-BUTOXY-2,3-EPOXY	07780213
PROPANE, 1,2-DIBROMO-3-CHLORO-	08770003 02780056 03780113 * 04780123 04780128 06780192S 07780219 *
PROPANE, 1,2-DIHYDROXY-	01780041 *
PROPANE, 1,2-EPOXY-3-METHOXY-	02780047

APPENDIX B. STATUS REPORTS BY CHEMICAL NAME

CHEMICAL NAME	SUBMISSION NO.	
PROPANE, 1,2-EPOXY-3-PHENOXY-	01790274	
PROPANE, 2-CHLORO-	01790272	
PROPANE, 2-METHYL-	09780240	
PROPANE, 2-NITRO-	05780170	
PROPANOL, 2,3-DIBROMO-	12770023 02780068 06780187	 * *
PYRAZINYL-T-UREA, N(2,6-DICHLOROBENZOYL)-3-[5(4-BROMOPHENYLPHENYL)-6	05780160S	*
RAW NATURAL GAS LIQUID MIX	08780237	*
S-CHLOROMETHYL-O,O-DIETHYL PHOSPHOROTHIOLOTHIONATE	09780239	
S-METHYL-N-((ALPHA'-METHYL-N'-METHYLCARBAMYLOXYMETHYLENE)OXY)]THIOACETAMIDATE	07780210	
SODIUM BICHROMATE CHROMIC ACID	05780151	
SODIUM BROMIDE	04780125	*
SODIUM CHROMATE	05780151	
SODIUM DICHROMATE DIHYDRATE	05780151	
SODIUM POLYACRYLATES	10770009C	
SOLVENT REFINED COAL (SRC) - FILTER FEED	10780247	
SRC MINERAL RESIDUE	07780217 10780252	
SRC NAPHTHA	07780217	
SRC WASH SOLVENT	07780217	
STYRENE	01790269S	
STYRENE, ALPHA-METHYL-	01790269S	
SULFUR CHLORIDE (CL2S2)	05780146	
SULFURIC ACID, DIBUTYL ESTER	10770006	
SULFURIC ACID, DIETHYL ESTER	10770006	
SULFURIC ACID, DIISOPROPYL ESTER	10770006	
SULFURIC ACID, DIMETHYL ESTER	10770006	
SUN-COR FLEXOGRAPHIC 74 RED INK	10780255	*

APPENDIX B. STATUS REPORTS BY CHEMICAL NAME

CHEMICAL NAME	SUBMISSION NO.	
TERTIARY-BUTYL GLYCIDYL ETHER	05790285	
TERTIARY-OCTYLMERCAPTAN	11780261	
TETRABROMO BIS(PHENOL A)BIS(2,3-DIBROMOPROPYL CARBONATE)	12770025	
TETRABROMO DIALLYL CARBONATE	12770025	
TETRABROMOBISPHENOL A	04780116 04780130 05780142 06780185	* * * *
TETRABROMOPHTHALATE, 1-PROPANOL MONOESTER	05780143	*
TETRABROMOPHTHALIC ANHYDRIDE	04780122 06780171	* *
THIOPHOSPHORAMIDATE, DIMETHYL-N-TETRAHYDROPYRONYL	06780176	*
THIOPHOSPHORAMIDE-N,N-DIMETHYLFORAMIDINE, N-2-METHOXYCARBONYL-1-METHYLVINYMETHOX	06780172 07780225	* *
THIOPHOSPHORYL-N',N'-DIMETHYLFORAMIDINE, O-METHYL-O-TRANS-(2-METHOXYCARBONYL-1-M	06780175	*
TOLUENE	02780079P	*
TOLUENE-2,4-DIAMINE	04780135	
TOLUENE, ALPHA-CHLORO-	07770001	
TOLUENE, ALPHA,ALPHA,ALPHA-TRICHLORO-,	07770001	
TOLUENE, 2,4-DINITRO-	02780046	*
TRIAZOLIDIN-3-ONE, 2-METHYL-4-(3,4-DICHLOROPHENYL)	06780203	*
TRIBROMOPHENOL, SODIUM SALT	07780227	*
TRIETHANOLAMINE	04780133	
TRIMELLETIC ANHYDRIDE	03790280	
TRIMETHYL PHOSPHITE	06790291	
TRIPHENYL PHOSPHINE	11770014 11770015S 02780055	
TUNICAMYCIN	05780155	*

APPENDIX B. STATUS REPORTS BY CHEMICAL NAME

CHEMICAL NAME	SUBMISSION NO.
UNKNOWN CAUSE	01780031P * 02780075P * 02780081P * 04780118P * 04780129 06780182P *
UREA, 1-(3,4-DICHLOROPHENYL)-1-CARBAMYL METHOXY-3-METHYL-	06780204
UREA, 1-B,B-DIMETHOXYETHYL-1-METHYL-3(5-T-BUTYL-1,3,4-THIADIAZOL-2-YL)	02780072 * 06780197 *
VEL-5026 INTERMEDIATES	01780039P *
VINYL CARBAZOLE	05790286
WELLAID PG-100	05790283
ZINC METAL SALTS	05780167

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* Based on a preliminary evaluation, the EPA believes that the information in this submission does not warrant being reported under Section 8(e). The submitting company has been requested to provide the basis for its contention that the information reported shows reasonable support for a conclusion of substantial risk.

APPENDIX C. STATUS REPORTS BY CAS REGISTRY NUMBER

CAS NUMBER	SUBMISSION NO.
56-23-5	03780110 *
	03780113 *
57-55-6	01780041 *
62-75-9	12780264
64-67-5	10770006
65-85-0	11770018P *
67-56-1	03780108 *
71-43-2	12770027
	03780112 *
	09780244
	03790277
74-93-1	05780149
75-01-4	03780104
75-05-8	05780149
75-21-8	10780248
75-28-5	09780240
75-29-6	01790272
75-44-5	02780076P *
	02780079P *
75-74-1	10780249
77-47-4	11770013
	01780037
	01780038
	02780054
	02780061
	02780064
	03780099 *
	03780102 *
	03780109 *
	03780110 *
	06780189P
	06780208
77-73-6	02780077P *
	03780097 *
	04780138P *
	06780180 *
77-78-1	10770006

APPENDIX C. STATUS REPORTS BY CAS REGISTRY NUMBER

CAS NUMBER	SUBMISSION NO.
78-00-2	10780249
78-78-4	09780240
79-01-6	05780146
79-11-8	05780154P
79-20-9	03780114 *
79-27-6	10780254
79-46-9	05780170
79-94-7	04780116 *
	04780130 *
	05780142 *
	06780185 *
92-49-9	05780169S *
92-52-4	11780256
95-80-7	04780135
96-12-8	08770003
	02780056
	03780113 *
	04780123
	04780128
	06780192S
	07780219 *
96-13-9	12770023
	02780068 *
	06780187 *
98-07-7	07770001
98-83-9	01790269S
98-87-3	07770001
98-88-4	07770001
	01780041 *
	04780138P *
	05780156 *
	06780180 *
100-42-5	01790269S
100-44-7	07770001
101-84-8	11780256

APPENDIX C. STATUS REPORTS BY CAS REGISTRY NUMBER

CAS NUMBER	SUBMISSION NO.	
102-71-6	04780133	
103-11-7	12780262	
103-71-9	06780178	
103-76-4	11780256	
106-89-8	11770016	
	08780230	
106-90-1	01790270	
106-91-2	01790270	
107-06-2	07780228	*
107-07-3	05780139	
108-05-4	04780124	*
108-31-6	02780063	*
108-88-3	02780079P	*
115-27-5	02780058	*
	02780059	*
	03780094	*
	03780101	*
	04780127	*
	04780134	
	06780206	*
	08780231	
118-79-6	12770024	
	12770032	
	02780069	
	03780095	*
	06780198	*
120-71-8	08780236	*
121-14-2	02780046	*
121-45-9	06790291	
122-07-6	01780036	*
122-60-1	01790274	

APPENDIX C. STATUS REPORTS BY CAS REGISTRY NUMBER

CAS NUMBER	SUBMISSION NO.	
126-72-7	10770007	
	02780056	
	04780123	
	04780128	
	06780192S	
127-09-3	04780120	*
127-18-4	05780146	
133-21-1	02780077P	*
	03780097	*
	04780138P	*
	07780222	*
140-88-5	10780250	
141-59-3	11780261	
382-21-8	10770011	
542-92-7	06780189P	
552-30-7	03790280	
593-60-2	11770019	
	08780234	
	04790281	
603-35-0	11770014	
	11770015S	
	02780055	
620-05-3	05790287	
624-92-0	05780149	
625-22-9	10770006	
632-79-1	04780122	*
	06780171	*
706-78-5	02780062	
828-66-0	02780063	*
928-04-1	12780263	*
930-37-0	02780047	
1333-82-0	05780151	
1484-13-5	05790286	

APPENDIX C. STATUS REPORTS BY CAS REGISTRY NUMBER

CAS NUMBER	SUBMISSION NO.
1738-25-6	03780105
1746-01-6	07780209
1832-07-1	05790288
1932-04-3	01780035 05780158S *
2223-82-7	01780028
2426-08-6	07780213
2442-57-7	09770005 * 02780070 04780121 *
2905-65-9	06780201 * 07780223 * 07780226 *
2973-10-6	10770006
3033-62-3	03780105
3389-71-7	06780189P
4196-86-5	07780229 *
4261-68-1	02780067 *
4584-49-0	02780073
4835-11-4	05780163
6058-23-7	03780093 *
6369-65-9	04790278 04790279
7177-48-2	02780045 *
7252-83-7	04780119 * 06780179 *
7440-02-0	09780246
7647-01-0	05780146
7647-15-6	04780125 *
7665-72-7	05790285
7775-11-3	05780151

APPENDIX C. STATUS REPORTS BY CAS REGISTRY NUMBER

CAS NUMBER	SUBMISSION NO.
7778-18-9	05780150 *
7782-50-5	05780146 06780183
7783-06-4	08780237 *
7783-20-2	01780034
7789-12-0	05780151
8006-14-2	11780260 *
9003-04-7	10770009C
10025-67-9	05780146
10025-87-3	02780078P * 02780080P *
10043-01-3	01780034
11089-65-9	05780155 *
11114-18-4	02780051 * 02780065 * 04780137 *
12108-13-3	07780211
12824-93-1	11780259
17157-48-1	04780126 *
17356-39-2	06780177 *
20109-39-1	06780181 *
21609-90-5	02780043 07780218
21908-53-2	12770021
22564-43-8	04790282S
23307-05-3	12780264
24934-91-6	09780239
25068-38-6	05790289
25329-35-5	06780189P
25563-14-8	07780221 *

APPENDIX C. STATUS REPORTS BY CAS REGISTRY NUMBER

CAS NUMBER	SUBMISSION NO.	
25637-99-4	03780088	*
26842-43-3	05780153S	*
26903-94-6	01790271	
33791-58-1	11770017P 06780207	* *
33857-26-0	10770008	
37853-59-1	01780040P 03780086 03780115 06780184	 * * *
51461-71-3	02780072 06780197	* *
56910-74-8	06780203	*
58496-98-3	12770025	
58573-43-6	07780227	*
59261-06-2	03780091 04780131	* *
59489-59-7	05780160S	*
60928-15-6	06780193	*
61791-97-7	05780165	
64741-48-6	08780237	*
64741-62-4	10780253	
66108-37-0	12770022 01780033 02780048 02780049 02780053 03780100 03780107 04780136 06780173 06780190	 * * * *
68109-57-9	10780251	
68410-09-3	07780217	

APPENDIX C. STATUS REPORTS BY CAS REGISTRY NUMBER

CAS NUMBER	SUBMISSION NO.
68410-72-0	07780217 10780252
68476-30-2	07780215
68476-79-9	07780217

APPENDIX C. STATUS REPORTS BY CAS REGISTRY NUMBER

CAS NUMBER	SUBMISSION NO.	
N.A.	08770002	
	09770004	*
	10770010	
	10770011	
	10770011	
	10770012	
	12770025	
	12770025	
	12770026C	
	01780029	
	01780030	
	01780031P	*
	01780039P	*
	02780042	
	02780044	
	02780050	*
	02780052P	
	02780057S	
	02780060	*
	02780066	*
	02780071	
	02780074	*
	02780075P	*
	02780081P	*
	02780082	
	02780083	
	03780084	*
	03780084	*
	03780085	
	03780087	*
	03780089	*
	03780090	*
	03780092	*
	03780096	*
	03780098	*
	03780103	*
	03780111	*
	04780117	*
	04780118P	*
	04780129	
	04780132	*
	05780140	
	05780141	*
	05780143	*
	05780144	
	05780145	*
	05780147	
	05780148	
	05780150	*
	05780152	
	05780157	*
	05780159S	*
	05780161S	*

APPENDIX C. STATUS REPORTS BY CAS REGISTRY NUMBER

CAS NUMBER	SUBMISSION NO.
N.A.	05780162S *
	05780164
	05780167
	05780167
	05780167
	05780167
	05780167
	05780168
	06780172 *
	06780174 *
	06780175 *
	06780176 *
	06780182P *
	06780187 *
	06780188 *
	06780191
	06780194 *
	06780195 *
	06780196 *
	06780199 *
	06780200 *
	06780202
	06780204
	06780205 *
	07780209
	07780209
	07780209
	07780209
	07780210
	07780212
	07780214
	07780216
	07780220 *
	07780224 *
	07780225 *
	09780238 *
	10780245
	10780247
	10780255 *
	11780258 *
	11780258 *
	01790267
	01790273
	02790275
	05790283
	05790284

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* Based on a preliminary evaluation, the EPA believes that the information in this submission does not warrant being reported under Section 8(e). The submitting company has been requested to provide the basis for its contention that the information reported shows reasonable support for a conclusion of substantial risk.

APPENDIX D. STATUS REPORTS BY STUDY TYPE

STUDY TYPE	SUBMISSION NO.
ACUTE TOXICITY - ANIMAL STUDY	08770003
	09770004 *
	09770005 *
	10770009C
	01780035
	01780041 *
	02780042
	02780048
	02780050 *
	02780058 *
	02780059 *
	02780060 *
	02780061
	02780062
	02780064
	02780065 *
	02780066 *
	02780070
	02780072 *
	02780074 *
	03780087 *
	03780088 *
	03780090 *
	03780091 *
	03780092 *
	03780094 *
	03780100 *
	03780108 *
	03780111 *
	03780114 *
	04780119 *
	04780120 *
	04780121 *
	04780124 *
	04780125 *
	04780126 *
	04780131 *
	04780132 *
	04780134
	04780137 *
	05780141 *
	05780142 *
	05780143 *
	05780144
	05780150 *
	05780151
	05780152
	05780153S *
	05780155 *
	05780158S *
	05780159S *
	05780161S *
	05780162S *

APPENDIX D. STATUS REPORTS BY STUDY TYPE

STUDY TYPE	SUBMISSION NO.	
	05780163	
	05780169S	*
	05780170	
	06780171	*
	06780172	*
	06780174	*
	06780175	*
	06780176	*
	06780177	*
	06780178	
	06780184	*
	06780185	*
	06780193	*
	06780194	*
	06780195	*
	06780196	*
	06780197	*
	06780198	*
	06780199	*
	06780200	*
	06780201	*
	06780203	*
	06780204	
	06780205	*
	06780206	*
	06780207	*
	07780210	
	07780217	
	07780219	*
	07780220	*
	07780222	*
	07780223	*
	07780224	*
	07780225	*
	07780226	*
	07780227	*
	07780229	*
	11780256	
	11780259	
	11780261	
	12780263	*
	01790271	
	04790282S	
	05790284	

APPENDIX D. STATUS REPORTS BY STUDY TYPE

STUDY TYPE	SUBMISSION NO.	
ALLERGENICITY INFORMATION	11770017P	*
	11770018P	*
	01780031P	*
	01780040P	
	02780081P	*
	05780145	*
	05780156	*
	06780181	*
	06780182P	*
	06780185	*
	06780206	*
	09780238	*
CARCINOGENESIS - ANIMAL STUDY	08770002	
	10770006	
	10770012	
	11770016	
	11770019	
	12770022	
	12770026C	
	01780028	
	01780029	
	02780044	
	02780046	*
	02780071	
	02780083	
	03780094	*
	03780098	*
	04780136	*
	05780140	
	05780148	
	05780150	*
	06780202	
	07780212	
	07780215	
	08780234	
	08780236	*
	09780246	
	10780251	
	10780253	
	12780262	
	01790274	
	04790281	
	05790283	
	05790286	
	05790287	
	05790289	
CARCINOGENESIS - HUMAN INCIDENT	07770001	
	04780135	
	05780167	
	09780246	

APPENDIX D. STATUS REPORTS BY STUDY TYPE

STUDY TYPE	SUBMISSION NO.	
CHEMICAL/PHYSICAL PROPERTIES	01780034	
	04780116	*
	04780117	*
	01790272	
CHRONIC TOXICITY - ANIMAL STUDY	05780160S	*
	05780165	
	08780231	
ENVIRONMENTAL EXPOSURE - EIEC	06780183	
	08780237	*
	09780240	
	10780255	*
	11780260	*
	03790277	
ENVIRONMENTAL EXPOSURE/RELEASE/FATE	11770013	
	12770032	
	01780037	
	02780043	
	02780045	*
	02780054	
	03780085	
	03780099	*
	04780116	*
	04780129	
	04780133	
	05780139	
	05780147	
	06780179	*
	06780189P	
	06780208	
	07780209	
	10780249	
	12780264	
EPIDEMIOLOGY - MORBIDITY/MORTALITY	11770016	
	03780096	*
	05780168	
	08780230	

APPENDIX D. STATUS REPORTS BY STUDY TYPE

STUDY TYPE	SUBMISSION NO.	
HUMAN TOXICITY - CASE STUDY/REPORT	10770011	
	11770015S	
	01780036	*
	01780038	
	01780039P	*
	02780052P	
	02780063	*
	02780067	*
	02780075P	*
	02780076P	*
	02780077P	*
	02780078P	*
	02780079P	*
	02780080P	*
	03780086	*
	03780097	*
	03780105	
	04780138P	*
	05780149	
	05780154P	
	05780164	
	06780180	*
	07780217	
	01790273	
	03790280	

APPENDIX D. STATUS REPORTS BY STUDY TYPE

STUDY TYPE	SUBMISSION NO.	
MUTAGENICITY STUDY	10770010	
	12770025	
	02780047	
	02780051	*
	02780053	
	02780057S	
	02780073	
	02780082	
	03780102	*
	03780107	
	04780127	*
	05780141	*
	05780164	
	05780165	
	05780170	
	06780184	*
	06780187	*
	06780191	
	06780206	*
	06780208	
	07780213	
	07780214	
	07780216	
	07780221	*
	09780239	
	10780248	
	10780254	
	01790270	
	04790278	
	04790279	
	05790285	
	05790286	
	05790287	
	05790288	
	05790289	
	06790291	
NEUROTOXIC EFFECTS - ANIMAL STUDY	11770015S	
	02780055	
	06780173	*
	06780188	*
	07780218	
	02790275	
NEUROTOXIC EFFECTS - HUMAN INCIDENT	12770021	
	04780118P	*

APPENDIX D. STATUS REPORTS BY STUDY TYPE

STUDY TYPE	SUBMISSION NO.	
OTHER	10770008	
	02780045	*
	02780046	*
	03780084	*
	03780089	*
	03780093	*
	03780102	*
	03780104	
	03780109	*
	03780110	*
	03780112	*
	03780113	*
	03780115	*
	04780118P	*
	05780146	
	07780228	*
	11780258	*
REPRODUCTIVE EFFECTS - ANIMAL STUDY	10770007	
	12770027	
	01780030	
	02780049	
	03780095	*
	03780101	*
	03780103	*
	04780122	*
	04780130	*
	06780184	*
	06780185	*
	06780208	
	07780211	
	09780244	
	10780245	
	10780247	
	10780248	
	10780252	
	01790267	
	01790269S	
REPRODUCTIVE EFFECTS - HUMAN INCIDENT	02780056	
	04780123	
	04780128	
	06780192S	

APPENDIX D. STATUS REPORTS BY STUDY TYPE

STUDY TYPE	SUBMISSION NO.	
SUBCHRONIC TOXICITY - ANIMAL STUDY	08770003	
	11770014	
	12770023	
	12770024	
	01780033	
	02780068	*
	02780069	
	05780157	*
	06780178	
	06780190	*
	10780250	
	06790291	

* Based on a preliminary evaluation, the EPA believes that the information in this submission does not warrant being reported under Section 8(e). The submitting company has been requested to provide the basis for its contention that the information reported shows reasonable support for a conclusion of substantial risk.

APPENDIX E. STATUS REPORTS BY SUBMISSION NUMBER

```
SUBMISSION NO.: 07770001
    CHEMICAL(S): BENZAL CHLORIDE
                 BENZOYL CHLORIDE
                 TOLUENE, ALPHA-CHLORO-
                 TOLUENE, ALPHA,ALPHA,ALPHA-TRICHLORO-,
    SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 08770002
    CHEMICAL(S): HYDROCARBON SOLVENTS
    SUBMITTING COMPANY: MOBIL OIL CORPORATION

SUBMISSION NO.: 08770003
    CHEMICAL(S): PROPANE, 1,2-DIBROMO-3-CHLORO-
    SUBMITTING COMPANY: OCCIDENTAL CHEMICAL COMPANY

SUBMISSION NO.: 09770004   *
    CHEMICAL(S): PCL BOTTOMS & HEX PCL BOTTOMS
    SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 09770005   *
    CHEMICAL(S): DIBROMOETHYL ACETATE
    SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 10770006
    CHEMICAL(S): SULFURIC ACID, DIBUTYL ESTER
                 SULFURIC ACID, DIETHYL ESTER
                 SULFURIC ACID, DIISOPROPYL ESTER
                 SULFURIC ACID, DIMETHYL ESTER
    SUBMITTING COMPANY: EXXON CORPORATION

SUBMISSION NO.: 10770007
    CHEMICAL(S): PHOSPHORIC ACID, 2,3-DIBROMOPROPYL, TRIESTER
    SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 10770008
    CHEMICAL(S): DIBENZO-P-DIOXIN, 2,7-DICHLORO-
    SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 10770009C
    CHEMICAL(S): SODIUM POLYACRYLATES
    SUBMITTING COMPANY: CONFIDENTIAL SUBMISSION

SUBMISSION NO.: 10770010
    CHEMICAL(S): HYDROCARBON SOLVENTS
    SUBMITTING COMPANY: AMERICAN PETROLEUM INSTITUTE

SUBMISSION NO.: 10770011
    CHEMICAL(S): FC-70 DECOMPOSITION PRODUCTS
                 PERFLUOROIMINE
                 PERFLUOROISOBUTYLENE
    SUBMITTING COMPANY: 3M COMPANY

SUBMISSION NO.: 10770012
    CHEMICAL(S): HYDRAULIC FLUID
    SUBMITTING COMPANY: UNION CARBIDE CORPORATION
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APPENDIX E. STATUS REPORTS BY SUBMISSION NUMBER

```
SUBMISSION NO.: 11770013
    CHEMICAL(S): CYCLOPENTADIENE, HEXACHLORO-
    SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 11770014
    CHEMICAL(S): TRIPHENYL PHOSPHINE
    SUBMITTING COMPANY: BASF WYANDOTTE CORPORATION

SUBMISSION NO.: 11770015S
    CHEMICAL(S): TRIPHENYL PHOSPHINE
    SUBMITTING COMPANY: M & T CHEMICALS INC.

SUBMISSION NO.: 11770016
    CHEMICAL(S): EPICHLOROHYDRIN
    SUBMITTING COMPANY: THOMPSON-HAYWARD CHEMICAL COMPANY

SUBMISSION NO.: 11770017P  *
    CHEMICAL(S): DICYCLOPENTADIENE ACRYLATE
    SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 11770018P  *
    CHEMICAL(S): BENZOIC ACID
    SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 11770019
    CHEMICAL(S): ETHYLENE, BROMO-
    SUBMITTING COMPANY: DOW BADISCHE COMPANY

SUBMISSION NO.: 12770021
    CHEMICAL(S): MERCURIC OXIDE
    SUBMITTING COMPANY: MALLORY & COMPANY INC

SUBMISSION NO.: 12770022
    CHEMICAL(S): BIS(1,3-DICHLORO-2-PROPYL)-3-CHLORO-2,2-DIBROMOMETHYL-1-PROPYL PHOSPHATE [MC 984
    SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 12770023
    CHEMICAL(S): PROPANOL, 2,3-DIBROMO-
    SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 12770024
    CHEMICAL(S): PHENOL, 2,4,6-TRIBROMO-
    SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 12770025
    CHEMICAL(S): PENTABROMOPHENYL-2,3-DIBROMOCARBONATE
                 TETRABROMO BIS(PHENOL A)BIS(2,3-DIBROMOPROPYL CARBONATE)
                 TETRABROMO DIALLYL CARBONATE
    SUBMITTING COMPANY: CHEMETRON CHEMICAL PRODUCTS

SUBMISSION NO.: 12770026C
    CHEMICAL(S): AROMATIC HYDROCARBONS
    SUBMITTING COMPANY: CONFIDENTIAL SUBMISSION

SUBMISSION NO.: 12770027
    CHEMICAL(S): BENZENE
    SUBMITTING COMPANY: AMERICAN PETROLEUM INSTITUTE
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APPENDIX E. STATUS REPORTS BY SUBMISSION NUMBER

```
SUBMISSION NO.: 01780028
     CHEMICAL(S): NEOPENTYL GLYCOL DIACRYLATE
     SUBMITTING COMPANY: UNION CARBIDE CORPORATION

SUBMISSION NO.: 01780029
     CHEMICAL(S): PETROLEUM CRUDE FRACTIONS,HIGH BOILING
     SUBMITTING COMPANY: AMERICAN PETROLEUM INSTITUTE

SUBMISSION NO.: 01780030
     CHEMICAL(S): CRUDE SHALE OILS
     SUBMITTING COMPANY: AMERICAN PETROLEUM INSTITUTE

SUBMISSION NO.: 01780031P  *
     CHEMICAL(S): UNKNOWN CAUSE
     SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 12770032
     CHEMICAL(S): PHENOL, 2,4,6-TRIBROMO-
     SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 01780033
     CHEMICAL(S): BIS(1,3-DICHLORO-2-PROPYL)-3-CHLORO-2,2-DIBROMOMETHYL-1-PROPYL PHOSPHATE [MC 984
     SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 01780034
     CHEMICAL(S): ALUMINUM SULFATE
                  AMMONIUM SULFATE
     SUBMITTING COMPANY: ALLIED CHEMICAL

SUBMISSION NO.: 01780035
     CHEMICAL(S): ETHANE, 1,2-DIPIPERIDINO-
     SUBMITTING COMPANY: REILLY TAR & CHEMICAL CORPORATION

SUBMISSION NO.: 01780036   *
     CHEMICAL(S): N-METHYLAMINO ACETALDEHYDE DIMETHYL ACETAL
     SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 01780037
     CHEMICAL(S): CYCLOPENTADIENE, HEXACHLORO-
     SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 01780038
     CHEMICAL(S): CYCLOPENTADIENE, HEXACHLORO-
     SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 01780039P  *
     CHEMICAL(S): VEL-5026 INTERMEDIATES
     SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 01780040P
     CHEMICAL(S): ETHANE, 1,2-BIS(2,4,6-TRIBROMOPHENOXY)  [FM 680]
     SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 01780041   *
     CHEMICAL(S): BENZOYL CHLORIDE
                  PROPANE, 1,2-DIHYDROXY-
     SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION
```

APPENDIX E. STATUS REPORTS BY SUBMISSION NUMBER

```
SUBMISSION NO.: 02780042
    CHEMICAL(S): FLUORINE COMPOUNDS
    SUBMITTING COMPANY: PCR INCORPORATED

SUBMISSION NO.: 02780043
    CHEMICAL(S): PHOSPHONOTHIOIC ACID, PHENYL-, O-(4-BROMO-2,5-DICHLOROPHENYL) O-METHYL ESTER
    SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 02780044
    CHEMICAL(S): NAPTHENIC OIL MIXTURE
    SUBMITTING COMPANY: SUN PETROLEUM PRODUCTS COMPANY

SUBMISSION NO.: 02780045   *
    CHEMICAL(S): AMPICILLIN TRIHYDRATE
    SUBMITTING COMPANY: BIOCRAFT LABORATORIES, INC.

SUBMISSION NO.: 02780046   *
    CHEMICAL(S): TOLUENE, 2,4-DINITRO-
    SUBMITTING COMPANY: ALLIED CHEMICAL

SUBMISSION NO.: 02780047
    CHEMICAL(S): PROPANE, 1,2-EPOXY-3-METHOXY-
    SUBMITTING COMPANY: PCR INCORPORATED

SUBMISSION NO.: 02780048
    CHEMICAL(S): BIS(1,3-DICHLORO-2-PROPYL)-3-CHLORO-2,2-DIBROMOMETHYL-1-PROPYL PHOSPHATE [MC 984
    SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 02780049
    CHEMICAL(S): BIS(1,3-DICHLORO-2-PROPYL)-3-CHLORO-2,2-DIBROMOMETHYL-1-PROPYL PHOSPHATE [MC 984
    SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 02780050   *
    CHEMICAL(S): POLYVEL M-106 POLYMER
    SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 02780051   *
    CHEMICAL(S): HEXABROMOCYCLODODECANE   [FM 100]
    SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 02780052P
    CHEMICAL(S): PHOSPHONIUM SALTS
    SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 02780053
    CHEMICAL(S): BIS(1,3-DICHLORO-2-PROPYL)-3-CHLORO-2,2-DIBROMOMETHYL-1-PROPYL PHOSPHATE [MC 984
    SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 02780054
    CHEMICAL(S): CYCLOPENTADIENE, HEXACHLORO-
    SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 02780055
    CHEMICAL(S): TRIPHENYL PHOSPHINE
    SUBMITTING COMPANY: M & T CHEMICALS INC.
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APPENDIX E. STATUS REPORTS BY SUBMISSION NUMBER

```
SUBMISSION NO.: 02780056
     CHEMICAL(S): PHOSPHORIC ACID, 2,3-DIBROMOPROPYL, TRIESTER
                  PROPANE, 1,2-DIBROMO-3-CHLORO-
     SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 02780057S
     CHEMICAL(S): AP-1155 - POLYAROMATIC AMINES
     SUBMITTING COMPANY: CONFIDENTIAL SUBMISSION

SUBMISSION NO.: 02780058   *
     CHEMICAL(S): CHLORENDIC ANHYDRIDE
     SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 02780059   *
     CHEMICAL(S): CHLORENDIC ANHYDRIDE
     SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 02780060   *
     CHEMICAL(S): BIS(TRIBROMONEOPENTYL)PENTAERYTHRITOL CYCLIC DIPHOSPHATE [MC 948]
     SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 02780061
     CHEMICAL(S): CYCLOPENTADIENE, HEXACHLORO-
     SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 02780062
     CHEMICAL(S): OCTACHLOROCYCLOPENTENE
     SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 02780063   *
     CHEMICAL(S): MALEIC ANHYDRIDE
                  METHENDIC ANHYDRIDE
     SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 02780064
     CHEMICAL(S): CYCLOPENTADIENE, HEXACHLORO-
     SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 02780065   *
     CHEMICAL(S): HEXABROMOCYCLODODECANE   [FM 100]
     SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 02780066   *
     CHEMICAL(S): POLYDIBROMOPHENYLENE OXIDE   [MC 935A]
     SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 02780067   *
     CHEMICAL(S): DIISOPROPYLAMINO ETHYL CHLORIDE HYDROCHLORIDE
     SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 02780068   *
     CHEMICAL(S): PROPANOL, 2,3-DIBROMO-
     SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 02780069
     CHEMICAL(S): PHENOL, 2,4,6-TRIBROMO-
     SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION
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APPENDIX E. STATUS REPORTS BY SUBMISSION NUMBER

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SUBMISSION NO.: 02780070
    CHEMICAL(S): DIBROMOETHYL ACETATE
    SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 02780071
    CHEMICAL(S): BIS(TRIBROMONEOPENTYL)PENTAERYTHRITOL CYCLIC DIPHOSPHATE [MC 948]
    SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 02780072   *
    CHEMICAL(S): UREA, 1-B,B-DIMETHOXYETHYL-1-METHYL-3(5-T-BUTYL-1,3,4-THIADIAZOL-2-YL)
    SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 02780073
    CHEMICAL(S): DIMETHYLAMINOISOPROPYL CHLORIDE HYDROCHLORIDE
    SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 02780074   *
    CHEMICAL(S): BROMINATED AROMATIC OILS   [CN-110-109]
    SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 02780075P  *
    CHEMICAL(S): UNKNOWN CAUSE
    SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 02780076P  *
    CHEMICAL(S): PHOSGENE
    SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 02780077P  *
    CHEMICAL(S): DICYCLOPENTADIENE
                 DICYCLOPENTADIENE ALCOHOL
    SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 02780078P  *
    CHEMICAL(S): PHOSPHOROUS OXYCHLORIDE
    SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 02780079P  *
    CHEMICAL(S): PHOSGENE
                 TOLUENE
    SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 02780080P  *
    CHEMICAL(S): PHOSPHOROUS OXYCHLORIDE
    SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 02780081P  *
    CHEMICAL(S): UNKNOWN CAUSE
    SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 02780082
    CHEMICAL(S): DIESEL FUEL
    SUBMITTING COMPANY: AMERICAN PETROLEUM INSTITUTE

SUBMISSION NO.: 02780083
    CHEMICAL(S): CRUDE SHALE OILS
    SUBMITTING COMPANY: AMERICAN PETROLEUM INSTITUTE
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SUBMISSION NO.: 03780084   *
    CHEMICAL(S): DIPHENYLMETHANE DIISOCYANATE
                 PHENOL FORMALDEHYDE RESIN
    SUBMITTING COMPANY: ASHLAND CHEMICAL CORPORATION

SUBMISSION NO.: 03780085
    CHEMICAL(S): DIBENZO-P-DIOXIN,POLYCHLORINATED
    SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 03780086   *
    CHEMICAL(S): ETHANE, 1,2-BIS(2,4,6-TRIBROMOPHENOXY)  [FM 680]
    SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 03780087   *
    CHEMICAL(S): ISOCYANATE DIMER OF 5-T-BUTYL-1,3,4-THIADAZOL-2-YL
    SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 03780088   *
    CHEMICAL(S): HEXABROMOCYCLODODECANE (RESIDUE)
    SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 03780089   *
    CHEMICAL(S): CHLORINATED NORBORNENE DERIVATIVES
    SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 03780090   *
    CHEMICAL(S): POLYDIBROMOPHENYLENE OXIDE   [MC 935A]
    SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 03780091   *
    CHEMICAL(S): BIS(2,3-DIBROMOPROPYL)ETHER [MC 933]
    SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 03780092   *
    CHEMICAL(S): BIS(TRIBROMONEOPENTYL)PENTAERYTHRITOL CYCLIC DIPHOSPHATE [MC 948]
    SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 03780093   *
    CHEMICAL(S): CHLORDENE EPOXIDE
    SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 03780094   *
    CHEMICAL(S): CHLORENDIC ANHYDRIDE
    SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 03780095   *
    CHEMICAL(S): PHENOL, 2,4,6-TRIBROMO-
    SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 03780096   *
    CHEMICAL(S): CHROMATES
    SUBMITTING COMPANY: ALLIED CHEMICAL

SUBMISSION NO.: 03780097   *
    CHEMICAL(S): DICYCLOPENTADIENE
                 DICYCLOPENTADIENE ALCOHOL
    SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION
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APPENDIX E. STATUS REPORTS BY SUBMISSION NUMBER

SUBMISSION NO.: 03780098 *
CHEMICAL(S): BIS(TRIBROMONEOPENTYL)PENTAERYTHRITOL CYCLIC DIPHOSPHATE [MC 948]
SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 03780099 *
CHEMICAL(S): CYCLOPENTADIENE, HEXACHLORO-
SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 03780100 *
CHEMICAL(S): BIS(1,3-DICHLORO-2-PROPYL)-3-CHLORO-2,2-DIBROMOMETHYL-1-PROPYL PHOSPHATE [MC 984
SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 03780101 *
CHEMICAL(S): CHLORENDIC ANHYDRIDE
SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 03780102 *
CHEMICAL(S): CYCLOPENTADIENE, HEXACHLORO-
SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 03780103 *
CHEMICAL(S): POLYDIBROMOPHENYLENE OXIDE [MC 935A]
SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 03780104
CHEMICAL(S): ETHYLENE, CHLORO-
SUBMITTING COMPANY: PETROLITE CORPORATION

SUBMISSION NO.: 03780105
CHEMICAL(S): BETA-(DIMETHYLAMINO)PROPIONITRILE
BIS(2-(DIMETHYLAMINO)ETHYL)ETHER
SUBMITTING COMPANY: UNION CARBIDE CORPORATION

SUBMISSION NO.: 03780107
CHEMICAL(S): BIS(1,3-DICHLORO-2-PROPYL)-3-CHLORO-2,2-DIBROMOMETHYL-1-PROPYL PHOSPHATE [MC 984
SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 03780108 *
CHEMICAL(S): METHANOL
SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 03780109 *
CHEMICAL(S): CYCLOPENTADIENE, HEXACHLORO-
SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 03780110 *
CHEMICAL(S): CARBON TETRACHLORIDE
CYCLOPENTADIENE, HEXACHLORO-
SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 03780111 *
CHEMICAL(S): HYDROXYACETALDEHYDE DIMETHYL ACETAL
SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 03780112 *
CHEMICAL(S): BENZENE
SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

APPENDIX E. STATUS REPORTS BY SUBMISSION NUMBER

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SUBMISSION NO.: 03780113   *
    CHEMICAL(S): CARBON TETRACHLORIDE
                 PROPANE, 1,2-DIBROMO-3-CHLORO-
    SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 03780114   *
    CHEMICAL(S): ACETIC ACID, METHYL ESTER
    SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 03780115   *
    CHEMICAL(S): ETHANE, 1,2-BIS(2,4,6-TRIBROMOPHENOXY)  [FM 680]
    SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 04780116   *
    CHEMICAL(S): TETRABROMOBISPHENOL A
    SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 04780117   *
    CHEMICAL(S): POLYNUCLEAR AROMATIC HYDROCARBONS
    SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 04780118P  *
    CHEMICAL(S): UNKNOWN CAUSE
    SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 04780119   *
    CHEMICAL(S): ETHANE, 2-BROMO-1,1-DIMETHOXY-
    SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 04780120   *
    CHEMICAL(S): ACETIC ACID, SODIUM SALT
    SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 04780121   *
    CHEMICAL(S): DIBROMOETHYL ACETATE
    SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 04780122   *
    CHEMICAL(S): TETRABROMOPHTHALIC ANHYDRIDE
    SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 04780123
    CHEMICAL(S): PHOSPHORIC ACID, 2,3-DIBROMOPROPYL, TRIESTER
                 PROPANE, 1,2-DIBROMO-3-CHLORO-
    SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 04780124   *
    CHEMICAL(S): ACETIC ACID, VINYL ESTER
    SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 04780125   *
    CHEMICAL(S): SODIUM BROMIDE
    SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 04780126   *
    CHEMICAL(S): BROMOACETALDEHYDE
    SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION
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SUBMISSION NO.: 04780127   *
    CHEMICAL(S): CHLORENDIC ANHYDRIDE
    SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 04780128
    CHEMICAL(S): PHOSPHORIC ACID, 2,3-DIBROMOPROPYL, TRIESTER
                 PROPANE, 1,2-DIBROMO-3-CHLORO-
    SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 04780129
    CHEMICAL(S): UNKNOWN CAUSE
    SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 04780130   *
    CHEMICAL(S): TETRABROMOBISPHENOL A
    SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 04780131   *
    CHEMICAL(S): BIS(2,3-DIBROMOPROPYL)ETHER [MC 933]
    SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 04780132   *
    CHEMICAL(S): POLYDIBROMOPHENYLENE OXIDE   [MC 935A]
    SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 04780133
    CHEMICAL(S): TRIETHANOLAMINE
    SUBMITTING COMPANY: LONZA INC.

SUBMISSION NO.: 04780134
    CHEMICAL(S): CHLORENDIC ANHYDRIDE
    SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 04780135
    CHEMICAL(S): TOLUENE-2,4-DIAMINE
    SUBMITTING COMPANY: OLIN CHEMICALS GROUP

SUBMISSION NO.: 04780136   *
    CHEMICAL(S): BIS(1,3-DICHLORO-2-PROPYL)-3-CHLORO-2,2-DIBROMOMETHYL-1-PROPYL PHOSPHATE [MC 984
    SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 04780137   *
    CHEMICAL(S): HEXABROMOCYCLODODECANE   [FM 100]
    SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 04780138P  *
    CHEMICAL(S): BENZOYL CHLORIDE
                 DICYCLOPENTADIENE
                 DICYCLOPENTADIENE ALCOHOL
    SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 05780139
    CHEMICAL(S): ETHANOL, 2-CHLORO-
    SUBMITTING COMPANY: MIRANOL CHEMICAL COMPANY, INC.
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APPENDIX E. STATUS REPORTS BY SUBMISSION NUMBER

SUBMISSION NO.: 05780140
CHEMICAL(S): PETROLEUM DISTILLATES
SUBMITTING COMPANY: SUN PETROLEUM PRODUCTS COMPANY

SUBMISSION NO.: 05780141 *
CHEMICAL(S): POLYDIBROMOPHENYLENE OXIDE [MC 935A]
SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 05780142 *
CHEMICAL(S): TETRABROMOBISPHENOL A
SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 05780143 *
CHEMICAL(S): TETRABROMOPHTHALATE, 1-PROPANOL MONOESTER
SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 05780144
CHEMICAL(S): DIPHENYLMETHANE DIISOCYANATE
SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 05780145 *
CHEMICAL(S): BIS(TRIBROMONEOPENTYL)PENTAERYTHRITOL CYCLIC DIPHOSPHATE [MC 948]
SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 05780146
CHEMICAL(S): CHLORINE
ETHYLENE, TETRACHLORO-
ETHYLENE, TRICHLORO-
HYDROGEN CHLORIDE
SULFUR CHLORIDE (CL2S2)
SUBMITTING COMPANY: HOOKER CHEMICALS AND PLASTICS CORPORATION

SUBMISSION NO.: 05780147
CHEMICAL(S): CHLORINATED HYDROCARBONS
SUBMITTING COMPANY: HOOKER CHEMICALS AND PLASTICS CORPORATION

SUBMISSION NO.: 05780148
CHEMICAL(S): PETROLEUM DISTILLATES
SUBMITTING COMPANY: STANDARD OIL COMPANY (INDIANA)

SUBMISSION NO.: 05780149
CHEMICAL(S): ACETONITRILE
DIMETHYL DISULFIDE
METHANETHIOL
SUBMITTING COMPANY: ALLIED CHEMICAL

SUBMISSION NO.: 05780150 *
CHEMICAL(S): ARSENIC/CADMIUM COMPOUNDS (INCLUDING MINING & SMELTING COMPOUNDS
CALCIUM SULFATE
SUBMITTING COMPANY: SMELTER ENVIRONMENTAL RESEARCH ASSOCIATION

SUBMISSION NO.: 05780151
CHEMICAL(S): SODIUM BICHROMATE CHROMIC ACID
SODIUM CHROMATE
SODIUM DICHROMATE DIHYDRATE
SUBMITTING COMPANY: PPG INDUSTRIES, INC.

APPENDIX E. STATUS REPORTS BY SUBMISSION NUMBER

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SUBMISSION NO.: 05780152
    CHEMICAL(S): CR-141
    SUBMITTING COMPANY: HERCULES INCORPORATED

SUBMISSION NO.: 05780153S  *
    CHEMICAL(S): PENTANE, 1-CYANO-2-AMINO-2,4-DIMETHYL
    SUBMITTING COMPANY: CONFIDENTIAL SUBMISSION

SUBMISSION NO.: 05780154P
    CHEMICAL(S): ACETIC ACID, CHLORO-
    SUBMITTING COMPANY: HERCULES INCORPORATED

SUBMISSION NO.: 05780155   *
    CHEMICAL(S): TUNICAMYCIN
    SUBMITTING COMPANY: ELI LILLY & COMPANY

SUBMISSION NO.: 05780156   *
    CHEMICAL(S): BENZOYL CHLORIDE
    SUBMITTING COMPANY: ELI LILLY & COMPANY

SUBMISSION NO.: 05780157   *
    CHEMICAL(S): DECOFURANURONIC ACID,6,9-DIAMINO-1-(AMINO-9H-PURIN-9-YL)-1,5,6,7,8,9-HEXADEOXY-B
    SUBMITTING COMPANY: ELI LILLY & COMPANY

SUBMISSION NO.: 05780158S  *
    CHEMICAL(S): ETHANE, 1,2-DIPIPERIDINO-
    SUBMITTING COMPANY: CONFIDENTIAL SUBMISSION

SUBMISSION NO.: 05780159S  *
    CHEMICAL(S): NITROANILINE, 2-N(2,2,3,3TETRAFLUOROPROPYL-1-AMIDE)-4-TRIFLUOROMETHYL-
    SUBMITTING COMPANY: CONFIDENTIAL SUBMISSION

SUBMISSION NO.: 05780160S  *
    CHEMICAL(S): PYRAZINYL-T-UREA, N(2,6-DICHLOROBENZOYL)-3-[5(4-BROMOPHENYLPHENYL)-6
    SUBMITTING COMPANY: CONFIDENTIAL SUBMISSION

SUBMISSION NO.: 05780161S  *
    CHEMICAL(S): BENZO-1,5-DIAZEPINE, 2-ETHYL-7-FLUORO-4(4-METHYL-1-PERAZINYL)10H-THIENO(2,3-B)
    SUBMITTING COMPANY: CONFIDENTIAL SUBMISSION

SUBMISSION NO.: 05780162S  *
    CHEMICAL(S): N-(2,4-DINITRO-6-(TRIFLUOROMETHYL)PHENYL)-N-METHYL-2,4,6--TRIBROMOBENZENAMINE
    SUBMITTING COMPANY: CONFIDENTIAL SUBMISSION

SUBMISSION NO.: 05780163
    CHEMICAL(S): N,N'-DIBUTYL-1,6-HEXANEDIAMINE
    SUBMITTING COMPANY: E. I. DUPONT DE NEMOURS & COMPANY

SUBMISSION NO.: 05780164
    CHEMICAL(S): (DICHLORO-TRIAZINO)AMINO-BENZYL-SULFONATE
    SUBMITTING COMPANY: ALLIED CHEMICAL

SUBMISSION NO.: 05780165
    CHEMICAL(S): N(2-METHYL-2-NITROPROPYL)-4-NITROSOANILINE
    SUBMITTING COMPANY: MONSANTO COMPANY
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SUBMISSION NO.: 05780167
    CHEMICAL(S): COBALT METAL SALTS
                 COPPER METAL SALTS
                 LEAD METAL SALTS
                 NICKEL METAL SALTS
                 ZINC METAL SALTS
    SUBMITTING COMPANY: SHEPHERD CHEMICAL COMPANY

SUBMISSION NO.: 05780168
    CHEMICAL(S): COPPER SMELTING COMPOUNDS
    SUBMITTING COMPANY: KENNECOTT COPPER CORPORATION

SUBMISSION NO.: 05780169S  *
    CHEMICAL(S): N(2-CHLOROETHYL)-N-ETHYLANILINE
    SUBMITTING COMPANY: EMERY INDUSTRIES, INC.

SUBMISSION NO.: 05780170
    CHEMICAL(S): PROPANE, 2-NITRO-
    SUBMITTING COMPANY: INTERNATIONAL MINERALS & CHEMICAL CORPORATIO

SUBMISSION NO.: 06780171   *
    CHEMICAL(S): TETRABROMOPHTHALIC ANHYDRIDE
    SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 06780172   *
    CHEMICAL(S): THIOPHOSPHORAMIDE-N,N-DIMETHYLFORAMIDINE, N-2-METHOXYCARBONYL-1-METHYLVINYMETHOX
    SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 06780173   *
    CHEMICAL(S): BIS(1,3-DICHLORO-2-PROPYL)-3-CHLORO-2,2-DIBROMOMETHYL-1-PROPYL PHOSPHATE [MC 984
    SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 06780174   *
    CHEMICAL(S): PHOSPHORIC ACID, 2,2-BIS(BROMOMETHYL)-3-HYDROXY-1-PROPYL
    SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 06780175   *
    CHEMICAL(S): THIOPHOSPHORYL-N',N'-DIMETHYLFORAMIDINE, O-METHYL-O-TRANS-(2-METHOXYCARBONYL-1-M
    SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 06780176   *
    CHEMICAL(S): THIOPHOSPHORAMIDATE, DIMETHYL-N-TETRAHYDROPYRONYL
    SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 06780177   *
    CHEMICAL(S): ETHYLAMINE,2-CHLORO-N,N-1-TRIMETHYL-, HYDROCHLORIDE
    SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 06780178
    CHEMICAL(S): PHENYL ISOCYANATE
    SUBMITTING COMPANY: MOBAY CHEMICAL CORPORATION

SUBMISSION NO.: 06780179   *
    CHEMICAL(S): ETHANE, 2-BROMO-1,1-DIMETHOXY-
    SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION
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SUBMISSION NO.: 06780180    *
    CHEMICAL(S): BENZOYL CHLORIDE
                 DICYCLOPENTADIENE
    SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 06780181    *
    CHEMICAL(S): DIPROPYLENE GLYCOL DIBENZOATE
    SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 06780182P   *
    CHEMICAL(S): UNKNOWN CAUSE
    SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 06780183
    CHEMICAL(S): CHLORINE
    SUBMITTING COMPANY: UNIROYAL CHEMICAL

SUBMISSION NO.: 06780184    *
    CHEMICAL(S): ETHANE, 1,2-BIS(2,4,6-TRIBROMOPHENOXY)  [FM 680]
    SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 06780185    *
    CHEMICAL(S): TETRABROMOBISPHENOL A
    SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 06780187    *
    CHEMICAL(S): ETHYLENE GLYCOL, 2-HYDROXYPROPYL-2(2-HYDROXYETHYL)
                 PROPANOL, 2,3-DIBROMO-
    SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 06780188    *
    CHEMICAL(S): BIS(TRIBROMONEOPENTYL)PENTAERYTHRITOL CYCLIC DIPHOSPHATE [MC 948]
    SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 06780189P
    CHEMICAL(S): CYCLOPENTADIENE
                 CYCLOPENTADIENE, HEXACHLORO-
                 HEXACHLORONORBORNADIENE
                 PENTACHLOROCYCLOPENTADIENE
    SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 06780190    *
    CHEMICAL(S): BIS(1,3-DICHLORO-2-PROPYL)-3-CHLORO-2,2-DIBROMOMETHYL-1-PROPYL PHOSPHATE [MC 984
    SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 06780191
    CHEMICAL(S): POLYDIBROMOPHENYLENE OXIDE   [MC 935A]
    SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 06780192S
    CHEMICAL(S): PHOSPHORIC ACID, 2,3-DIBROMOPROPYL, TRIESTER
                 PROPANE, 1,2-DIBROMO-3-CHLORO-
    SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 06780193    *
    CHEMICAL(S): IMIDAZOLIDINONE, 1-(5-T-BUTYL-1,3,4-THIADIAZOL-2-YL)-3-METHYL-5-ACETOXY-2-
    SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION
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SUBMISSION NO.: 06780194 *
CHEMICAL(S): OCTANOYLIMIDAZOLIDIN-2-ONE, 1-(5-T-BUTYL-1,3,4-THIADIAZOL-2-YL)-3-METHYL-5-
SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 06780195 *
CHEMICAL(S): BENZAMIDINE, N(2-METHOXYCARBONYL-1-METHYLVINYL-METHOXY-THIOPHOSPHORYL)
SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 06780196 *
CHEMICAL(S): ACETAMIDINE,N-(2-ISOPROPOXYCARBONYL-1-METHYLVINYL-METHOXYTHIOPHOSPHORAMIDO)
SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 06780197 *
CHEMICAL(S): UREA, 1-B,B-DIMETHOXYETHYL-1-METHYL-3(5-T-BUTYL-1,3,4-THIADIAZOL-2-YL)
SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 06780198 *
CHEMICAL(S): PHENOL, 2,4,6-TRIBROMO-
SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 06780199 *
CHEMICAL(S): IMIDAZOLIDIN-2-ONE, 1-(5-T-BUTYL-1,3,4-THIADIAZOL-2-YL)-3-METHYL-5(M-CHLOROBENZO
SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 06780200 *
CHEMICAL(S): BENZENE, 1,4-DIBROMO-2,5-DICHLORO-
SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 06780201 *
CHEMICAL(S): METHYL-M-CHLOROBENZOATE
SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 06780202
CHEMICAL(S): POLYETHYLATED BENZENE TAILS
SUBMITTING COMPANY: UNION CARBIDE CORPORATION

SUBMISSION NO.: 06780203 *
CHEMICAL(S): TRIAZOLIDIN-3-ONE, 2-METHYL-4-(3,4-DICHLOROPHENYL)
SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 06780204
CHEMICAL(S): UREA, 1-(3,4-DICHLOROPHENYL)-1-CARBAMYL METHOXY-3-METHYL-
SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 06780205 *
CHEMICAL(S): POLYVEL G-100
SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 06780206 *
CHEMICAL(S): CHLORENDIC ANHYDRIDE
SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 06780207 *
CHEMICAL(S): DICYCLOPENTADIENE ACRYLATE
SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

APPENDIX E. STATUS REPORTS BY SUBMISSION NUMBER

SUBMISSION NO.: 06780208
CHEMICAL(S): CYCLOPENTADIENE, HEXACHLORO-
SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 07780209
CHEMICAL(S): CHLORINATED DIOXIN
CHLOROPHENOLS
DIBENZO-P-DIOXIN, 2,3,7,8-TETRACHLORO-
POLYBROMINATED BIPHENYLS
POLYCHLORINATED BIPHENYLS
SUBMITTING COMPANY: DOW CHEMICAL COMPANY

SUBMISSION NO.: 07780210
CHEMICAL(S): S-METHYL-N-((ALPHA'-METHYL-N'-METHYLCARBAMYLOXYMETHYLENE)OXY)THIOACETAMIDATE
SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 07780211
CHEMICAL(S): METHYLCYCLOPENTADIENYLMANGANESE TRICARBONYL
SUBMITTING COMPANY: ETHYL CORPORATION

SUBMISSION NO.: 07780212
CHEMICAL(S): PETROLEUM CRUDE FRACTIONS
SUBMITTING COMPANY: AMERICAN PETROLEUM INSTITUTE

SUBMISSION NO.: 07780213
CHEMICAL(S): PROPANE, 1,2-BUTOXY-2,3-EPOXY
SUBMITTING COMPANY: SHELL OIL COMPANY

SUBMISSION NO.: 07780214
CHEMICAL(S): KENPLAST G (MIXED AROMATIC HYDROCARBONS)
SUBMITTING COMPANY: KENRICH PETROCHEMICALS, INC.

SUBMISSION NO.: 07780215
CHEMICAL(S): NUMBER 2 BURNER FUEL
SUBMITTING COMPANY: EXXON CORPORATION

SUBMISSION NO.: 07780216
CHEMICAL(S): CRUDE SHALE OILS
SUBMITTING COMPANY: AMERICAN PETROLEUM INSTITUTE

SUBMISSION NO.: 07780217
CHEMICAL(S): SRC MINERAL RESIDUE
SRC NAPHTHA
SRC WASH SOLVENT
SUBMITTING COMPANY: GULF MINERAL RESOURCES CO.

SUBMISSION NO.: 07780218
CHEMICAL(S): PHOSPHONOTHIOIC ACID, PHENYL-, O-(4-BROMO-2,5-DICHLOROPHENYL) O-METHYL ESTER
SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 07780219 *
CHEMICAL(S): PROPANE, 1,2-DIBROMO-3-CHLORO-
SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 07780220 *
CHEMICAL(S): BROMODICHLOROBENZENE (NEUTRAL OILS FROM HYDROLYSIS)
SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

APPENDIX E. STATUS REPORTS BY SUBMISSION NUMBER

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SUBMISSION NO.: 07780221   *
    CHEMICAL(S): N-METHOXY-4-CHLOROBENZAMIDE
    SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 07780222   *
    CHEMICAL(S): DICYCLOPENTADIENE ALCOHOL
    SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 07780223   *
    CHEMICAL(S): METHYL-M-CHLOROBENZOATE
    SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 07780224   *
    CHEMICAL(S): ACETAMIDINE,N-(2-ISOPROPOXYCARBONYL-1-METHYLVINYL-METHOXYTHIOPHOSPHORAMIDO)
    SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 07780225   *
    CHEMICAL(S): THIOPHOSPHORAMIDE-N,N-DIMETHYLFORAMIDINE, N-2-METHOXYCARBONYL-1-METHYLVINYMETHOX
    SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 07780226   *
    CHEMICAL(S): METHYL-M-CHLOROBENZOATE
    SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 07780227   *
    CHEMICAL(S): TRIBROMOPHENOL, SODIUM SALT
    SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 07780228   *
    CHEMICAL(S): ETHANE, 1,2-DICHLORO-
    SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 07780229   *
    CHEMICAL(S): BENZOFLEX S-552
    SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 08780230
    CHEMICAL(S): EPICHLOROHYDRIN
    SUBMITTING COMPANY: SHELL OIL COMPANY

SUBMISSION NO.: 08780231
    CHEMICAL(S): CHLORENDIC ANHYDRIDE
    SUBMITTING COMPANY: VELSICOL CHEMICAL CORPORATION

SUBMISSION NO.: 08780234
    CHEMICAL(S): ETHYLENE, BROMO-
    SUBMITTING COMPANY: ETHYL CORPORATION

SUBMISSION NO.: 08780236   *
    CHEMICAL(S): O-ANISIDINE, 5-METHYL-
    SUBMITTING COMPANY: SHERWIN-WILLIAMS COMPANY

SUBMISSION NO.: 08780237   *
    CHEMICAL(S): HYDROGEN SULFIDE
                 RAW NATURAL GAS LIQUID MIX
    SUBMITTING COMPANY: PHILLIPS PETROLEUM COMPANY
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APPENDIX E. STATUS REPORTS BY SUBMISSION NUMBER

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SUBMISSION NO.: 09780238   *
    CHEMICAL(S): FUEL OIL
    SUBMITTING COMPANY: CONSOLIDATION COAL COMPANY

SUBMISSION NO.: 09780239
    CHEMICAL(S): S-CHLOROMETHYL-O,O-DIETHYL PHOSPHOROTHIOLOTHIONATE
    SUBMITTING COMPANY: RHODIA, INC.

SUBMISSION NO.: 09780240
    CHEMICAL(S): BUTANE, 2-METHYL-
                 PROPANE, 2-METHYL-
    SUBMITTING COMPANY: PHILLIPS PETROLEUM COMPANY

SUBMISSION NO.: 09780244
    CHEMICAL(S): BENZENE
    SUBMITTING COMPANY: EXXON CORPORATION

SUBMISSION NO.: 10780245
    CHEMICAL(S): POLYSTYRENE WASTE STREAMS
    SUBMITTING COMPANY: DOW CHEMICAL COMPANY

SUBMISSION NO.: 09780246
    CHEMICAL(S): NICKEL
    SUBMITTING COMPANY: NIPRO, INC.

SUBMISSION NO.: 10780247
    CHEMICAL(S): SOLVENT REFINED COAL (SRC) - FILTER FEED
    SUBMITTING COMPANY: GULF MINERAL RESOURCES CO.

SUBMISSION NO.: 10780248
    CHEMICAL(S): ETHYLENE OXIDE
    SUBMITTING COMPANY: UNION CARBIDE CORPORATION

SUBMISSION NO.: 10780249
    CHEMICAL(S): PLUMBANE, TETRAETHYL-
                 PLUMBANE, TETRAMETHYL-
    SUBMITTING COMPANY: E. I. DUPONT DE NEMOURS & COMPANY

SUBMISSION NO.: 10780250
    CHEMICAL(S): ACRYLIC ACID, ETHYL ESTER
    SUBMITTING COMPANY: CELANESE CORPORATION

SUBMISSION NO.: 10780251
    CHEMICAL(S): ACETOPHENONE, 2,2'-DI(SEC-BUTOXY)
    SUBMITTING COMPANY: UNION CARBIDE CORPORATION

SUBMISSION NO.: 10780252
    CHEMICAL(S): SRC MINERAL RESID[illegible]
    SUBMITTING COMPANY: GULF MINER[illegible] RESOURCES CO.

SUBMISSION NO.: 10780253
    CHEMICAL(S): INTERMEDIATE CLARIFIED OIL SOLVENT EXTRACT
    SUBMITTING COMPANY: STANDARD OIL COMPANY (SOHIO)

SUBMISSION NO.: 10780254
    CHEMICAL(S): ETHANE, 1,1,2,2-TETRABROMO-
    SUBMITTING COMPANY: AMERIBROM, INC.
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SUBMISSION NO.: 10780255 *
CHEMICAL(S): SUN-COR FLEXOGRAPHIC 74 RED INK
SUBMITTING COMPANY: UNION CAMP CORPORATION

SUBMISSION NO.: 11780256
CHEMICAL(S): BIPHENYL
ETHER, DIPHENYL
PIPERAZINE, 2-HYDROXYETHYL-
SUBMITTING COMPANY: TEXACO, INC.

SUBMISSION NO.: 11780258 *
CHEMICAL(S): INK ROLLER DESENSITIZER
MULTILITHE DEGLAZING SOLVENT
SUBMITTING COMPANY: CONSOLIDATION COAL COMPANY

SUBMISSION NO.: 11780259
CHEMICAL(S): BUT-2-ENOIC ACID, 2,2,4,4,4-PENTACLORO, N-BUTYL ESTER
SUBMITTING COMPANY: MALLINCKRODT, INC.

SUBMISSION NO.: 11780260 *
CHEMICAL(S): NATURAL GAS.
SUBMITTING COMPANY: PHILLIPS PETROLEUM COMPANY

SUBMISSION NO.: 11780261
CHEMICAL(S): TERTIARY-OCTYLMERCAPTAN
SUBMITTING COMPANY: STANDARD OIL COMPANY (INDIANA)

SUBMISSION NO.: 12780262
CHEMICAL(S): ACRYLIC ACID, 2-ETHYLHEXYL ESTER
SUBMITTING COMPANY: UNION CARBIDE CORPORATION

SUBMISSION NO.: 12780263 *
CHEMICAL(S): ACETYLENECARBOXYLIC ACID, MONOPOTASSIUM SALT
SUBMITTING COMPANY: EASTMAN KODAK COMPANY

SUBMISSION NO.: 12780264
CHEMICAL(S): DIMETHYLAMINE SULFATE
DIMETHYLAMINE, N-NITROSO-
SUBMITTING COMPANY: ROHM & HAAS COMPANY

SUBMISSION NO.: 01790267
CHEMICAL(S): ETHANE, 1,1,1-TRIFLUORO-2-CHLORO-
SUBMITTING COMPANY: ICI AMERICAS INC.

SUBMISSION NO.: 01790269S
CHEMICAL(S): STYRENE
STYRENE, ALPHA-METHYL-
SUBMITTING COMPANY: HERCULES INCORPORATED

SUBMISSION NO.: 01790270
CHEMICAL(S): GLYCIDYL ACRYLATE
GLYCIDYL METHACRYLATE
SUBMITTING COMPANY: THIOKOL CORPORATION

SUBMISSION NO.: 01790271
CHEMICAL(S): BENZENE, N,N-DIETHYL-4-(1H-1,2,4 TRIAZOL-3-YLAZO)
SUBMITTING COMPANY: TOMS RIVER CHEMICAL CORPORATION

APPENDIX E. STATUS REPORTS BY SUBMISSION NUMBER

SUBMISSION NO.: 01790272
CHEMICAL(S): PROPANE, 2-CHLORO-
SUBMITTING COMPANY: HERCULES INCORPORATED

SUBMISSION NO.: 01790273
CHEMICAL(S): HEXYN-3-OL
SUBMITTING COMPANY: DOW CHEMICAL COMPANY

SUBMISSION NO.: 01790274
CHEMICAL(S): PROPANE, 1,2-EPOXY-3-PHENOXY-
SUBMITTING COMPANY: E. I. DUPONT DE NEMOURS & COMPANY

SUBMISSION NO.: 02790275
CHEMICAL(S): OCTAN-2-ONE, 5-METHYL-
SUBMITTING COMPANY: TENNESSEE EASTMAN COMPANY

SUBMISSION NO.: 03790277
CHEMICAL(S): BENZENE
SUBMITTING COMPANY: PHILLIPS PETROLEUM COMPANY

SUBMISSION NO.: 04790278
CHEMICAL(S): C.I. VAT GREEN #9
SUBMITTING COMPANY: TOMS RIVER CHEMICAL CORPORATION

SUBMISSION NO.: 04790279
CHEMICAL(S): C.I. VAT GREEN #9
SUBMITTING COMPANY: CIBA-GEIGY CORPORATION

SUBMISSION NO.: 03790280
CHEMICAL(S): TRIMELLETIC ANHYDRIDE
SUBMITTING COMPANY: CONTINENTAL OIL CO. (CONOCO)

SUBMISSION NO.: 04790281
CHEMICAL(S): ETHYLENE, BROMO-
SUBMITTING COMPANY: ETHYL CORPORATION

SUBMISSION NO.: 04790282S
CHEMICAL(S): N-(2-CHLOROETHYL)-N-ETHYL-M-TOLUIDINE
SUBMITTING COMPANY: EMERY INDUSTRIES, INC.

SUBMISSION NO.: 05790283
CHEMICAL(S): WELLAID PG-100
SUBMITTING COMPANY: STANDARD OIL COMPANY (INDIANA)

SUBMISSION NO.: 05790284
CHEMICAL(S): ETHOXYLATED C12-C15 ALCOHOLS
SUBMITTING COMPANY: EMERY INDUSTRIES, INC.

SUBMISSION NO.: 05790285
CHEMICAL(S): TERTIARY-BUTYL GLYCIDYL ETHER
SUBMITTING COMPANY: DOW CHEMICAL COMPANY

SUBMISSION NO.: 05790286
CHEMICAL(S): VINYL CARBAZOLE
SUBMITTING COMPANY: XEROX CORPORATION

SUBMISSION NO.: 05790287
CHEMICAL(S): M-IODOTOLUENE
SUBMITTING COMPANY: XEROX CORPORATION

SUBMISSION NO.: 05790288
CHEMICAL(S): PHOSPHONITRILIC CHLORIDE
SUBMITTING COMPANY: ETHYL CORPORATION

SUBMISSION NO.: 05790289
CHEMICAL(S): BISPHENOL A-EPICHLOROHYDRIN RESINS
SUBMITTING COMPANY: XEROX CORPORATION

SUBMISSION NO.: 06790291
CHEMICAL(S): TRIMETHYL PHOSPHITE
SUBMITTING COMPANY: MOBIL OIL CORPORATION

* Based on a preliminary evaluation, the EPA believes that the information in this submission does not warrant being reported under Section 8(e). The submitting company has been requested to provide the basis for its contention that the information reported shows reasonable support for a conclusion of substantial risk.

NOTE:

Pending the final determination of the EPA Office of General Counsel the status reports prepared for the following submissions are considered CONFIDENTIAL and will not appear in this volume:

8EHQ-1077-0009C
8EHQ-1277-0026C
8EHQ-0179-0266C
8EHQ-0179-0268C

The following document control numbers are considered to be VOID due to clerical errors made during the EPA logging of Section 8(e) documents:

8EHQ-XXXX-0020
8EHQ-XXXX-0106
8EHQ-XXXX-0166
8EHQ-XXXX-0186
8EHQ-XXXX-0232
8EHQ-XXXX-0233
8EHQ-XXXX-0235
8EHQ-XXXX-0241
8EHQ-XXXX-0242
8EHQ-XXXX-0243
8EHQ-XXXX-0257
8EHQ-XXXX-0265
8EHQ-XXXX-0276
8EHQ-XXXX-0290